Volunteer Firemen

DECEMBER 1944

NATIONAL FIRE PROTECTION ASSOCIATION
INTERNATIONAL
60 Batterymarch Street Boston 10, Massachusetts

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ARMY NAVY

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Volunteer Firemen

Volume 11 Number 12

Published by the National Fire Protection Association, a voluntary non-profit organization, 60 Batterymarch St., Boston 10, Mass.

PERCY BUGBEE *General Manager*
ROBERT S. MOULTON *Technical Secretary*
HORATIO BOND *Chief Engineer*
WARREN Y. KIMBALL *Editor*
CHARLES S. MORGAN *Advertising Manager*

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THE cover this month is an aerial view of the recent Cleveland gas holder explosion and fire in which 130 persons lost their lives. In the upper foreground can be seen the remains of the gas storage spheres. The picture includes nearly all of the fire area, from the railroad bridge in the left background, to the American Gas Association laboratory in the right foreground. The complete story begins on page 6.

FROM the Nassau County, N. Y., Fire Commission, George W. Clough, Fire Marshal (member N.F.P.A.) comes this press release: "Warning was issued by the Nassau County Fire Commission at meeting in Mineola last night against carelessness in the use of improper fuels in furnaces and stoves during the coming winter.

"With the present shortages of heating oils and solid fuels and the sudden surplus of timber provided by trees felled in the recent storm, the Commission fears that fires from over-heated chimneys may be caused by continuous use of logs and wood in heating plants.

"It was pointed out that it is never safe to burn large quantities of any fuel other than that for which it was intended in any cooking or heating device.

"Attention was also called to dangers which may result from the constant use of fireplaces which may not be of the best construction, with full and adequate insulation against the conduction of heat, as well as the risk of sparks from unscreened fireplaces or from chimneys on wood shingle roofs."

Such press releases by local fire officials do much to secure public observance of fire safety precautions.

THE October, 1944, VOLUNTEER FIREMEN printed two pictures of the fire that destroyed a block of unsprinklered warehouses in Durham, N. C. Since that fire, an ordinance has been passed requiring that:

"All buildings which may be constructed for the manufacturing, processing, redrying, selling or temporary storage of tobacco, and buildings used for textile manufacture, shall be of fireproof construction and shall be protected on the interior with *an approved automatic sprinkler system*. Fireproofing of the steel members of the roof supports or trusses may be omitted above the top of the supporting columns. Buildings now in existence and built of heavy timber or mill construction and equipped with automatic sprinkler systems are exempt from the provisions of this ordinance." This may appear to be "locking the barn door after the horse has been stolen" but actually it is a progressive move. All too often no attempt is made to remove or control fire hazards when replacing burned property.

ACCORDING to Vallejo, Cal., *Evening Chronicle*, October 18, Fire Chief Laddie Jacobson is looking for the fire station supposedly built there by the Federal Works Agency, as reported in the October VOLUNTEER FIREMEN, by Harry Hewes, FWA Field Representative. The *Chronicle* reports the matter as follows:

"Fire Chief Hunts for Mystery Fire Station"

"In the October issue of the VOLUNTEER FIREMEN, official publication of the National Fire Protection Association, is a picture of a fire station, two fire trucks and a group of firemen which the caption identifies as being in Vallejo.

"When he discovered the picture today, Chief Jacobson was perplexed. It didn't match up with any fire house in the city — at least any that the chief knows about.

"Someone jokingly suggested that the station might be one erected by a government agency without the fire department's knowledge. Another 'possibility' was that by some unexplained method a picture had been obtained of a station yet to be constructed and equipped with fire trucks.

" 'If anyone can find this station for me I wish they would send in an alarm,' Chief Jacobson commented."

The Editors of VOLUNTEER FIREMEN are also wondering where this attractive fire station is located. Apparently the FWA got their captions crossed.

FIRE losses in the United States during October were estimated at $32,173,000 according to figures of the National Board of Fire Underwriters. The total fire losses for the 12 months ending October 31, 1944, were $421,363,000, compared with a total of $360,885,000 for the 12 months ending a year earlier. October losses were 8 per cent above the losses for October, 1943.

Canadian fire losses for October were $2,000,000, an increase of $250,000 over the revised September total, and a 46 per cent drop from the 1943 total.

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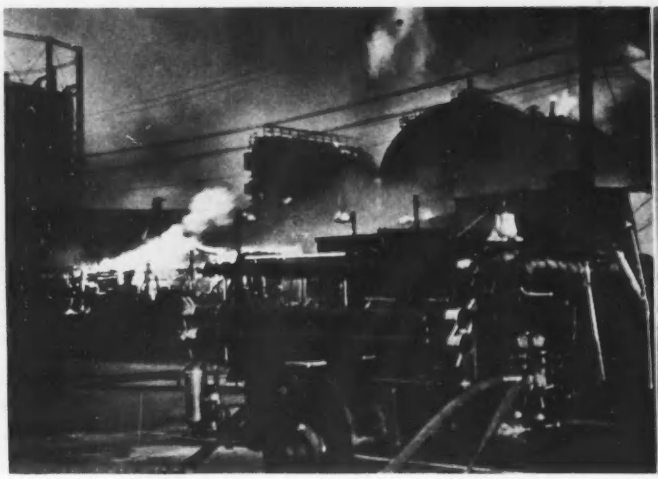
Mack Manufacturing Corporation, 370 Empire State Building, New York 1, N. Y.



International

Looking toward the East Ohio Gas Co. plant, flames are seen issuing from the vents of one of the spherical liquefied gas containers which preserved its contents. Fire also may be observed around the base of the nearest spherical tainer, and also near the refrigeration equipment to the left of the containers.

Acme

Eighty-two dwellings and numerous private garages were destroyed by the conflagration. Auxiliary firemen and civilians aided hard-pressed regular Cleveland fire fighters in checking the blaze.

CLEVELAND GAS EXPLOSION AND FIRE

This report by your Editor is purely preliminary and is subject to modification when further details become available. The report is based upon information obtained during a personal visit to the fire area a few days after the explosion occurred. Your Editor wishes to acknowledge with thanks the cooperation and assistance of Chief James E. Granger of the Cleveland Fire Department and Building Commissioner William D. Guion.

DISASTER, unforeseen and hitherto unimagined, struck and devastated part of Cleveland's industrial zone on October 20th, causing loss of life to at least 130 people and $6,000,000 damage. With the ignition of sufficient gas to light every industrial hearth in the city, two containers of liquefied natural gas exploded and threw sheets of flame over nearby residential areas.

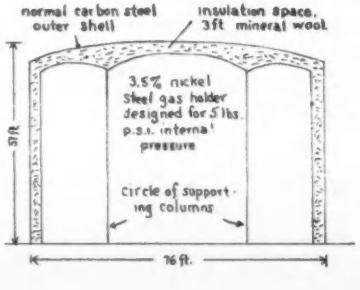
The explosion at the East Ohio Gas Company involved liquefied natural gas, refrigerated to minus 250° F. This was a unique operation; the conditions found in this plant were not in any way comparable with other known storage of liquefied gases under pressure. While there was no previous experience to guide the engineers who designed this equipment, an experimental pilot plant had been built and every effort was made to make the installation as foolproof as possible.

The site of this explosion is shown by the accompanying diagram. Used as a gas plant for many years, the storage had previously consisted of several of the conventional water seal type of gas holders. The company obtained natural gas from fields in West Virginia for distribution in the Cleveland area.

Due to heavy industrial demands, it had been found necessary to build up reserves of gas to meet periods of peak load. To accomplish this, special gas holder equipment had been designed for refrigerated storage of natural gas. This was converted at the plant to a liquid state by means of refrigeration equipment. The original installation, constructed in 1940, included three spherical gas holders, each of 100,000 cubic feet liquid capacity. These gas holders consisted of an inner shell containing 3.5 per cent nickel steel, 3 feet of ground cork insulation, and an outer shell of ordinary steel plate. The nickel steel was found necessary in order to resist the severely low temperatures which ordinary steel plate could not be expected to withstand without danger of cracking due to brittleness or contraction. Gas was normally retained in the holders at a pressure of only 2½ to 3 lbs. per square inch and was provided with pressure relief vents to take care of any above-normal pressure. Adjacent to the holders was refrigeration equipment utilizing ethylene as the refrigerant for the natural gas, primarily methane.

The new container was somewhat larger, having a capacity of 160,000 cubic feet of liquid gas and was cylindrical in shape. Due to wartime shortage of the desired cork insulation, 3 feet of mineral wool insulation was provided between the inner and outer shells. (*See drawing.*)

A theory as to the possible cause of failure, advanced by Building Commissioner William D. Guion (member N.F.P.A.), of Cleveland, is that some time previous to the disaster an undetected leak may have developed in the inner torso segmental tank, permitting the liquid to enter the insulation chamber, where it naturally vaporized and built up tremendous pressure, eventually causing a break or tear in the outer shell. This rupture of the outer shell, together with friction, could cause ignition of the vapors.


normal carbon steel outer shell
insulation space, 3ft mineral wool
3.5% nickel Steel gas holder designed for 5 lbs. p.s.i. internal pressure
Circle of supporting columns
91ft.
76ft.

Another possible theory as to the cause of the initial tank failure, not as yet substantiated by any definite evidence, is that in some way, moisture accumulated in the mineral wool insulation, reducing the insulating value of the mineral wool. However, it has not been conclusively established that the initial failure occurred in this container rather than the adjoining spherical tank, but the mineral wool insulation of this holder was thrown over a large area, indicating an explosion with the release of considerable pressure in this tank.

Engineers in the American Gas Association research laboratory are said to have observed the early stages of the accident before fire or explosion occurred. Their testimony appears to conflict in some details but indicates that a gas leak preceded the first fire or explosion. One witness reported having seen a cloud of "white

vapor" coming from the bottom of the one spherical tank which was destroyed. This witness shouted warnings to nearby workers who were running from the neighborhood when the first terrific flash of flames occurred.

Similar stories by other persons in the same building indicated that the cylindrical liquid gas container just to the right of this sphere appeared "to suddenly disintegrate." These persons likewise joined in immediate flight from the area.

Witnesses in the residential area involved in the fire, south of the gas company property, stated the vapors seemed to rush down the streets and that fingers of flame apparently shot out from various dwellings along these streets. Others reported that the sky appeared filled with flames and that huge balls of fire "bounced above the neighborhood," destroying life and property wherever they landed. One engineer, measured a burst of flame reaching 2,800 feet. Some observers and residents stated that drops of what they believed liquid gas fell upon roofs, starting fires.

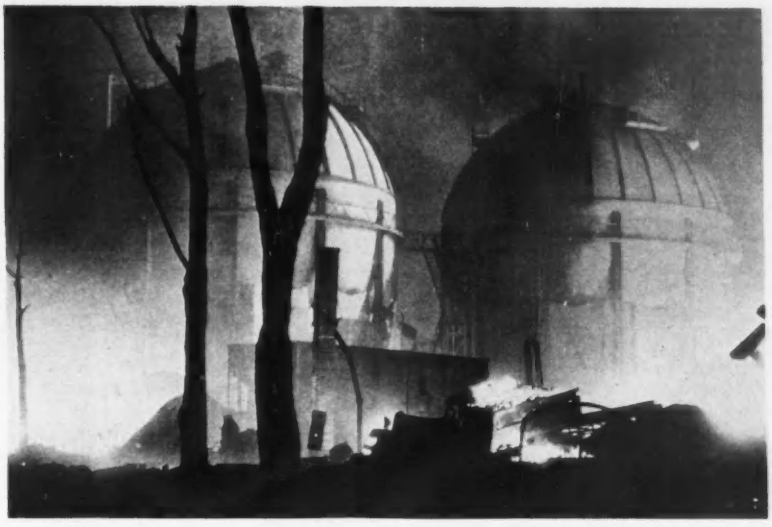
Another factor that probably influenced fire behaviour was that the burning of several million cubic feet of vaporized liquid gas would have required tremendous volumes of oxygen. Methane, the chief ingredient of natural gas, has a fairly wide explosive range (5.3 to 14.0% by volume) so that the 156 million cubic feet of gas from the ruptured containers could have made from 1.1 to 2.9 billion cubic feet of explosive mixture. Obviously, this could provide flames of tremendous magnitude.

Those early on the scene saw streams of liquefied gas flowing down gutters into sewers and other openings. For several hours after the initial fires, sewer explosions of earthquake intensity rocked the neighborhood south of the fire, particularly along St. Clair Ave., and adjacent streets to the south. Extensive portions of St. Clair Ave. were blown upward for a number of inches. Manhole covers were sent high into the air, in some cases going completely over buildings. At one point where a fire department pumper was operating, the machine was blown into the air and then landed in a huge crater, remaining suspended with its suction hose still connected to the hydrant.

The Cleveland Fire Department, under Chief James E. Granger, did heroic work in controlling this conflagration. Fire department records show that the total amount of apparatus mobilized at the fire included 27 engine companies, 7 ladder companies, 2 rescue squads, 1 hose company, and a U. S. Coast Guard fire boat.

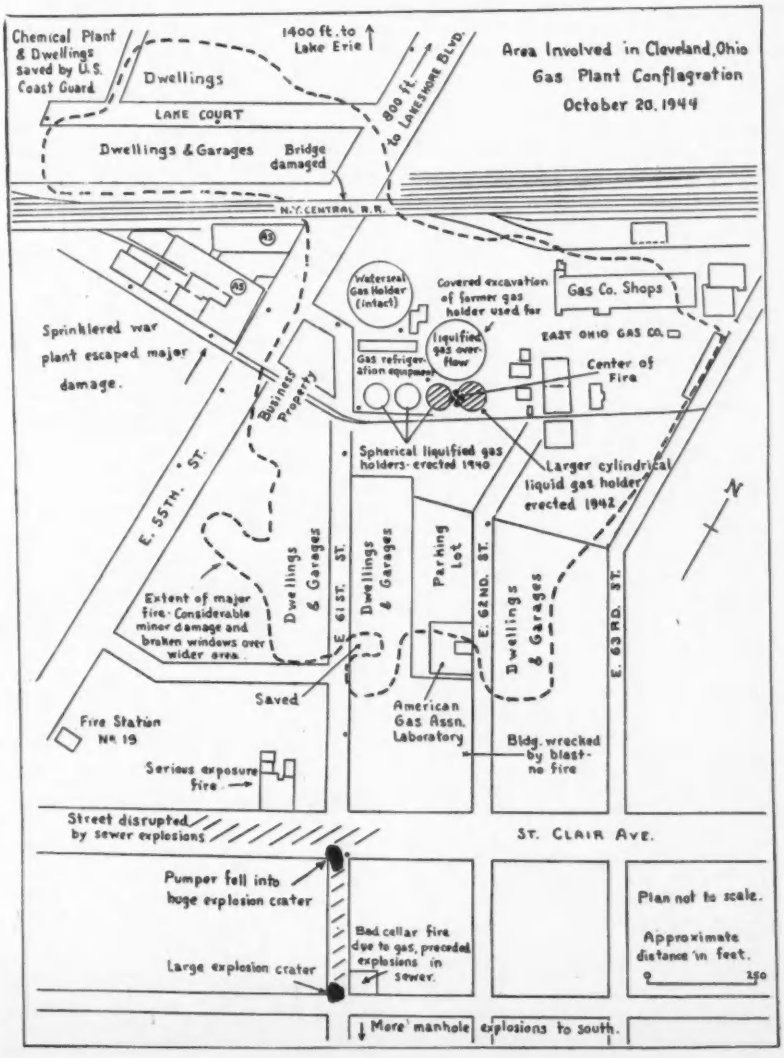
The first alarm was received at 2:43 P.M. from Captain Zahler of Engine No. 19, located close to the gas company property. Realizing the seriousness of the situation, he did not wait the arrival of a chief officer but sounded a second alarm at 2:45 P.M.

(*Continued on page 19*)



Press Association, Inc.

Flames from the ruins illuminate two liquid gas storage spheres which passed through the intense flames caused by the burning of 260,000 cubic feet of liquefied natural gas in two adjacent containers that were demolished.


Area Involved in Cleveland, Ohio Gas Plant Conflagration October 20, 1944
Chemical Plant & Dwellings saved by U.S. Coast Guard
1400 ft. to Lake Erie
800 ft. to LAKESHORE BLVD.
Dwellings
LAKE COURT
Dwellings & Garages
Bridge damaged
N.Y. CENTRAL R.R.
Waterseal Gas Holder (intact)
Covered excavation of former gas holder used for
Gas Co. Shops
EAST OHIO GAS CO.
Liquified gas overflow
Gas refrigeration equipment
Center of Fire
Sprinklered war plant escaped major damage.
Business Property
Spherical liquified gas holders- erected 1940
Larger cylindrical liquid gas holder erected 1942
E. 55TH. ST.
E. 61ST. ST.
E. 62ND. ST.
E. 63RD. ST.
Dwellings & Garages
Parking Lot
Extent of major fire- Considerable minor damage and broken windows over wider area.
Saved
Fire Station No. 19
American Gas Assn. Laboratory
Bldg. wrecked by blast- no fire
Serious exposure fire
Street disrupted by sewer explosions
ST. CLAIR AVE.
Pumper fell into huge explosion crater
Large explosion crater
Bad cellar fire due to gas, preceded explosions in sewer.
More manhole explosions to south.
Plan not to scale.
Approximate distance in feet.
0
150
N

Historical Development of the Fire Hydrant

by A. D. Jackson, Manager
Little Rock Municipal Water Works, Arkansas

Abstract from the *Journal of The American Water Works Association*

The Editors of VOLUNTEER FIREMEN *wish to thank Mr. Jackson, N.F.P.A. member, and the A.W.W.A., organization member of the N.F.P.A., for their courtesy in making this historical article available.*

THE fire hydrant is of relatively recent origin, having been developed within the past 150 years. This fact may seem strange since fire has always been regarded as the greatest destructive agent known, and methods to combat fire have been practiced by mankind throughout the ages. There are, however, numerous and important factors that account for this seemingly slow development, and an effort will be made to trace some of the historical events leading up to present-day fire-fighting and hydrant methods.

Probably the greatest influences in the development of the fire hydrant were the methods used to distribute water. The early water systems transported water under low head [*i.e.*, pressure; Ed.] and it was not until in the eighteenth century that street mains were constantly and sufficiently charged.

Low service under very moderate pressure or without residual pressure at the point of use, is still practiced in many countries. Under the low service method of distribution, fountains, reservoirs, cisterns and public baths furnished water requirements.

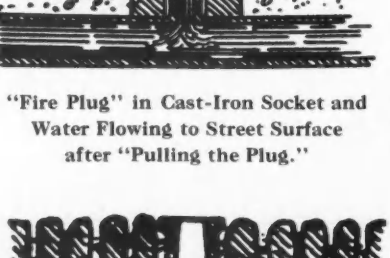
As pipe materials and jointing methods improved, pressures were increased and the method of distributing water was changed from low service to pressure service. At first, pressure service was intermittent in character and was so practiced on the Continent and in England. Under this arrangement, water service was only available at intervals, was entirely unsatisfactory, and soon gave way to constant high-pressure distribution.

Steam fire engines first made their appearance in the 1820's, but it was not until the latter half of the nineteenth century that they came into general use. Insufficient water distribution facilities may have been in part responsible for the slow progress of power-driven pumps. The use of power-driven engines was responsible in a large degree for improvement in hydrant construction.

History records that spring water was first brought into London through lead pipes and conduits in the thirteenth century. Between the years 1606 and 1620 many pipes were laid in the London area. These pipelines were made by boring out wooden logs, a method known and used for many centuries. This type of pipe material and the method of joining pipe sections together would not permit very high pressures. As a result, low-pressure service was practiced on these early systems and the practice continued until the nineteenth century.

The first effort to obtain water direct from the street main for fire purposes was very crude. First a hole was dug in the street and the water main located; then a hole was bored in the wooden main and the water was collected from the street hole either by bucket or suction hose and fed into the pump. After the fire was extinguished, a wooden plug was driven into the hole and the street surface was restored.

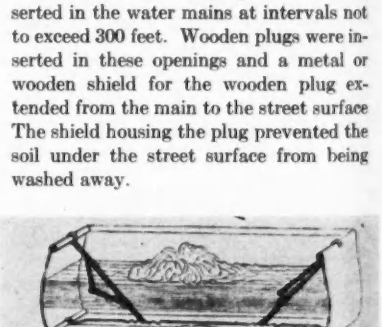
"Fire Plug" in Cast-Iron Socket and Water Flowing to Street Surface after "Pulling the Plug."



The use of a wooden plug in this manner was the origin of the phrase "fire plug," a term still commonly used today. The letters "F P" are still widely used to mark the location of "fire hydrants." The word hydrant derived from hydro (Greek: *hudor*, water) probably originated in the United States.

Trouble was experienced with this method in that dirt fouled the pump valves, streets were badly washed and, with the advent of street pavements, excavating the holes became more difficult.

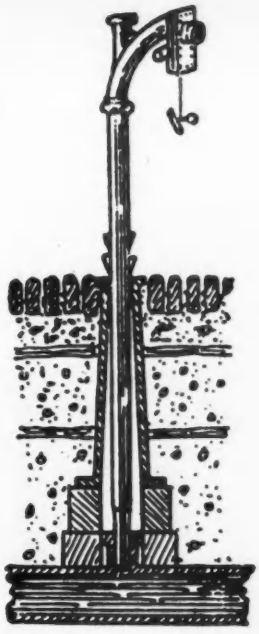
The next improvement of "fire plug" design followed the introduction of cast-iron pipe. Although cast iron had been used for water pipes in France since the year 1664 it did not come into general use for water mains until the beginning of the nineteenth century. With the increased use of cast iron, sockets or branch fittings with openings were placed at intervals in the water mains. A later law (1847) prescribed that these fire plug sockets be inserted in the water mains at intervals not to exceed 300 feet. Wooden plugs were inserted in these openings and a metal or wooden shield for the wooden plug extended from the main to the street surface The shield housing the plug prevented the soil under the street surface from being washed away.



Fire Plug Arrangement with Canvas Cistern.

To prevent excessive waste of water and also provide a more constant flow to the pump suction the next development was the use of the canvas cistern in the year 1820.

With the increased use of cast iron, distribution pressures were stepped up, and this led to the development of the stand-



Standpipe Inserted Directly into Main Socket.

pipe with a tapered end for insertion directly into the main, and at the opposite end, a hose connection outlet. The brigades soon discarded the canvas dams, preferring to connect the hose to the standpipe in order to utilize the main pressure.

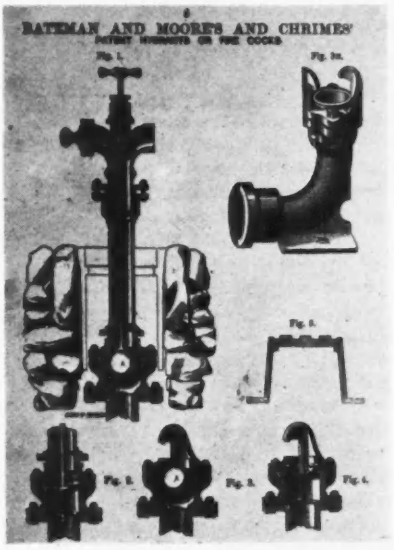
It was soon realized that the "plug type" of hydrant had definite limitations and was practically useless under conditions of high pressure. The pulling of the plug and the insertion of the tapered standpipe against good pressure was sometimes a difficult and always a wet task. This fact led to the use of a controlling valve or cock.

In Hamburg, Germany, a connection was made to the side of the main and a stop cock inserted which was operated by a vertical rod from the street. The hydrant tube curved up to the street level where it terminated with one or more hose connections.

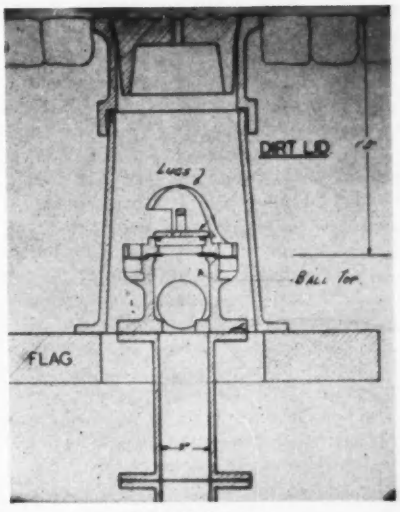
In England, the hydrant (fire cock) was connected to a vertical branch from the main or to an elbow attached to the main, and the whole arrangement called a ball hydrant. The picture reproduced from an 1876 catalog of Guest & Chrimes, Ltd., Rotherham, England, illustrates the ball hydrant patented by Messrs. Bateman and Moore about the year 1849. The following description is quoted from the catalog:

"The Patent Fire Cocks were introduced as substitute for the inefficient Wood Plug at that time in general use. Since the introduction of these Fire Cocks in 1849 upwards of 150,000 have been supplied, and are now in use in many of the principal Towns in the Kingdom, and abroad. Under constant high pressure, they supersede the necessity for Fire Engines, as in cases of fire they can be brought into almost instant operation, with the most perfect ease and efficiency, and without any waste of water . . ."

"The Fire Cock consists of a Cast Iron Box or Casing, containing a Self-acting Valve, closed by the pressure of the water. For Street purposes this casing is attached to a vertical branch, from the Water Main, or by an elbow pipe attached to the end of the Main, and when not in use the outlet of the Valve is closed by a loose cover or stopper, and the whole protected from injury by a Cast Iron Case similar to ordinary cases or covers for protecting Street Cocks or Fire Plugs."



Ball Hydrant, Patented about 1849.



Ball Hydrants.

A serious objection to the ball type of hydrant is the fact that when pressure is taken off the main the ball drops from its seat allowing dirt to enter the main from the hydrant box. When pressure is reestablished the water may be contaminated. To overcome the possibility of water contamination a device known as a conversion element is fitted into the hydrant tube in place of the ball. This element consists of a brass dome fitted in a guide and held upward against the seat by a strong spring.

Location of the hydrant below the ground surface (flush type) and the transporting of the standpipe or nozzle section is the current practice in England.

Soon after this country was settled, the construction of public water supplies was begun. Some of the early systems with approximate dates are as follows: Boston, 1652; Bethlehem, Penna., 1761; Providence, R. I., 1772; Morriston, N. J., 1791; Plymouth, Mass., and Philadelphia, Penna., 1797. By the year 1800 there were fewer than 20 water works in the United States.

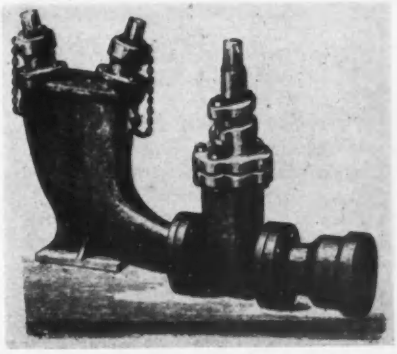
Underground cisterns were primarily used as a water source on these early systems, and in many cities remained popular after the introduction of the hydrant. In the beginning these reservoirs were either supplied by rain water, or were kept full by manual pumping. With the installation of street mains direct connections were made to service these cisterns and their use continued as a supplement to hydrant service.

The first mention of hydrants appears in a Philadelphia report of 1801. The following quotation is taken from the 1801 report to the Select and Common Council by the Committee for the introduction of wholesome water in Philadelphia.

"The plan of hydrants that were first used has been wholly rejected and another, which answers better, substituted. Of the latter thirty-seven (37) are now fixed in different parts of the City, and six (6) more are in readiness for the same use."

It is assumed "the plan of hydrants" that were formerly used and "rejected" were of the common plug type. By the year 1811 Philadelphia claimed 230 wooden hydrant pumps and 185 fire hydrants.

Cisterns were used in New York City and were generally of 100 hogshead capacity (6,300 gallons). Fire plugs were mentioned as used in the city as early as 1807 but these were most likely "plugs" and not hydrants. It is related that the first fire hydrant in New York was installed in 1817 in front of the dwelling of Mr.



Sluice Valve Type Hydrant with Two Outlets.

George B. Smith of Engine Company No. 12 on Frankfort Street.

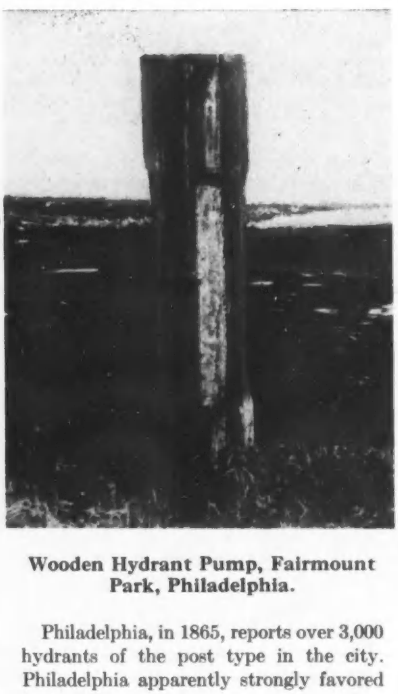
In 1854 Detroit reports 65 street reservoirs in addition to hydrants; and in 1864, reports 249 hydrants, and 127 cisterns. The cisterns were connected to water mains by 3-inch lines but some were increased to 4 inches, due to insufficiency of supply, as explained in the report:

"Since the introduction of steam fire engines into the city, complaints have been made of the insufficiency of the supply of water in the street reservoirs in some localities; this may be remedied by introducing an additional stream into them."

In 1861 Louisville reports no fire hydrants and 124 street cisterns. The following extract from the Louisville report of 1861 is interesting:

"One hundred of the street cisterns for the Fire Department are connected with the water pipes. No fire plugs are in use, their efficacy for supplying steam fire engines with water has heretofore been regarded as doubtful. In some of the Eastern cities they are, however, used in addition to street cisterns and regarded as equally efficacious, and much more economical in construction and the use of water. . . ."

In 1864 Boston reports 1,530 hydrants and 96 cisterns with 15 of the cisterns connected to water mains.



Wooden Hydrant Pump, Fairmount Park, Philadelphia.

Philadelphia, in 1865, reports over 3,000 hydrants of the post type in the city. Philadelphia apparently strongly favored hydrants over cistern service

For a final example, the history of Little Rock, Ark., is given. Records indicate that in 1837 soon after the city became incorporated, the city council passed an ordinance calling for the construction of public cisterns. These were located at most street intersections in the area that is now the principal mercantile district. Great care was taken to protect these supplies for the purpose intended since the law stated: "It shall be unlawful for any person or persons to take even by bucket or pipe any water from any public reservoir or cistern of the city used for the extinguishment of fires."

Cisterns had many disadvantages including high first cost, inflexibility due to wide spacing, limited capacity, excessive water losses due to leakage, dissipation of available system pressure and the total elimination of direct streams, a preliminary service very effective in the extinguishment of many fires. Cistern service made it necessary to depend entirely on engine streams, a fact that increased the popularity of hydrant and hose service. Therefore, with the improvements in distribution practice, including high pressures, supply pipes of larger diameter, and the production of more sturdy and reliable hydrants, cisterns were gradually replaced.

It has been previously emphasized that fire hydrant development was largely dependent on methods of distribution. Many of the early systems were insufficient in pressure and capacities to accommodate present fire hydrant service methods. The deficiencies of those early water systems were recognized first by owners of factories and high business buildings where system pressures were inadequate for fire protection. Pumps were installed on these individual premises and the benefits were so apparent that it was not very long before high pressures were extended to entire water works systems.

It may be said that United States led the way in adopting pressure service, and also in the development of the fixed-post type fire hydrant with control valve constantly charged with pressure.

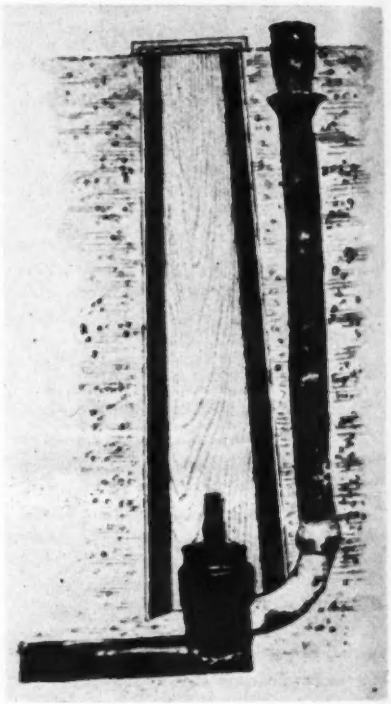
The first post type hydrant in the United States was designed by Mr. Frederick Graff, Chief Engineer of the Philadelphia Water Works and was used in Philadelphia about the year 1801. It had a combination hose and faucet outlet, and was a "wet barrel" design with the valve in the top.

It is certainly not surprising to learn that the "wet barrel" design gave trouble.

An improved hydrant with the valve at the base and facilities to drain the barrel was next introduced by Mr. Graff in October, 1803. The engraving was published October 1, 1817, by order of the Water Committee for the use of Hose and Engine Companies. These first hydrants, the forerunner of the modern post hydrant, were inserted by a tapering joint into the wooden main and were sometimes carried by the brigades, English fashion. With the introduction of cast-iron water mains, sockets or branch fittings were inserted in the line at intervals and permanently connected hydrants of the flush type became more popular.

The hydrants that followed differed in detail depending on the manufacturer, but for the purpose of a general description the hydrant and installation included the following features:

A branch line was installed from the street main to the sidewalk to which was attached a "hydrant" bend. The hydrant was connected to the bend and terminated in one or more hose outlets either below the ground level (flush type) or above the ground level (post type). The flush type hydrant required a wooden or metal housing or hydrant box.



Fire Hydrant, Richmond, Virginia, 1830.

Following the English practice the flush type of hydrant at first was the more popular. The personal whim of the fireman appears to have had considerable influence in the final adoption of the post type of hydrant. In this connection Samuel McElroy, C. E., Reports in the *Journal of the Franklin Institute*, April Issue, 1865:

"The American Hydrants, are placed along the curb lines of the sidewalk, and either 'flush' with the sidewalk grade, or with 'stand-pipe' heads, the former being more common in the Eastern, and the latter in the Middle States, although the water administrations of the milder sections, object to the 'flush' hydrant on account of winter weather. The more correct cause for their adoption is to be attributed partly to the habit of following certain beaten paths, without much inquiry as to their alignment, and the desire to accede to the wishes and prejudices of the volunteer firemen, who exercise considerable rivalry in securing the first hydrant for his particular 'machine,' and have a special regard for those more readily found in the general race of precedence. In the hurly-burly of a fire-alarm and of arrivals on the ground, a fireman looks more picturesque seated on the hydrant which he

Continued on page 24

*This word is inserted by author.

LOS ANGELES AERIAL FIRE PATROL

Reported by Chief Engineer John H. Alderson

THE City of Los Angeles is unique among American cities in that it has within its boundaries approximately 150 square miles of brush covered and timber covered mountainous area. Through this area go a number of busy highways. In the canyons extending considerable distances into the mountainous area are well-developed, high-value residential districts. In remote sections are resort and cabin developments. Much of the area is inaccessible. Mountain peaks exceeding 2,700 feet and very precipitous are in more remote sections. A number of very serious fires have occurred requiring the full resources of the department to control, aided at times by the resources of the Los Angeles County Fire Department.

The City maintains as a portion of the Fire Department a Forestry Division. Accessible areas are constantly patrolled throughout the dry season by firemen with light tank trucks. The Fire Department has built and maintains more than one hundred miles of fire roads and more than forty miles of firebreaks. Fire roads are closed to the public by locked gates. It is not unusual for a fire started at the inhabited portion to extend quickly into the inaccessible areas. Fires involving a front or head of several miles are not unusual. Reconnaissance and size-up at a fire of this extent is extremely difficult and slow. Fires starting in the back country are frequently unobserved until they assume major proportions.

To meet this problem the department in the past season, which ordinarily extends from late in May until the last of November, has experimented with the use of an airplane. This plane is owned by a member of the department who is a licensed pilot. By permission of the military authorities and the Civil Aeronautics Authority, unlimited flights can be made. The plane is kept at the Grand Central Airport, very close to the mountain area. It is used on a rental basis and operated by the owner as a regular duty assignment. Officers responsible for fires in this area have found that a few hours flight is more valuable for familiarizing themselves with the area than many days of inspections. Horses have previously been used for inspection trips. The use of the airplane makes this unnecessary and the department's horses are now being sold. Incidentally, the Los Angeles Fire Department is probably the last large department to maintain horses.

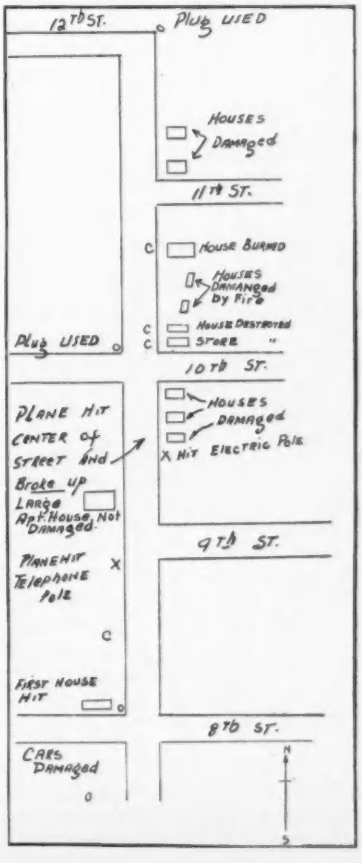
During periods of low humidity, the area is patrolled constantly for the purpose of reporting incipient fires. The plane will also be used at fires to permit officers in charge to make a quick size-up. Communication with the ground forces can be maintained through two-way radio or by dropping parachute tubes containing messages and maps showing the fire front. The plane has a speed of 120 miles per hour and due to its low cruising speed can land on a very small flat area. After the value of an airplane for this purpose has been definitely proven, it is the intention of the department to purchase a plane for permanent use.

NAVY PLANE CRASH AND FIRE

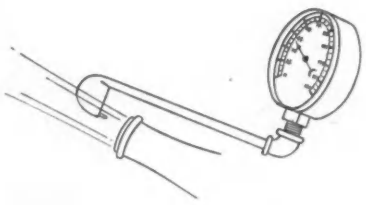
CHIEF CRAIG PERROTT, of the Coqueville, Oregon, Volunteer Fire Department, reports a fire which threatened a residential district when a Navy plane crashed on October 15th. The fire occurred at 4 P.M. on a Sunday afternoon. Firemen had observed the airplane, noticing it was in trouble, and lost no time in responding to the alarm.

Three men in the plane could not be saved. Ten dwellings and a store caught on fire, but only one house was a complete loss. Most of the buildings were of one-story frame construction with shingle roofs. Firemen used hose streams supplemented with back pack pumps to control the blaze.

In falling, the plane clipped a house on the corner of 8th Street, as shown in the diagram, then hit an electric light pole on 9th Street, went through a frame store on 10th Street, and struck an adjoining house. The gasoline tank penetrated the roof of one dwelling. Losses totaled $18,000.



Dabbling with Fire Streams



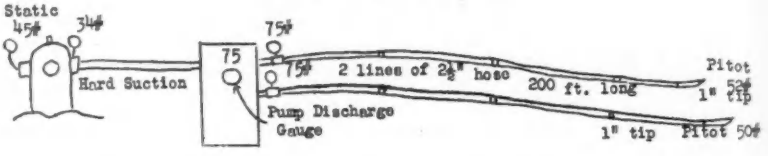
LAST month under the heading "Where Did That Pressure Go?" we described the experiments with fire stream behavior conducted by George Orgain, Oklahoma Fire Instructor at the annual fire college at Stillwater, last summer. These experiments were made to allow firemen to observe just what does happen when water flows through hose and nozzles.

This month we present more of those tests which not only show how pressures are used up in passing through the hose, but show how much water can be obtained through a small hydrant connection, the advantage of using a hard suction, and other things that pump operators and firemen like to know about the behavior of water in fire stream layouts.

1. In the experiments presented last month it was shown that with a 1-inch nozzle tip at 50 pounds nozzle pressure that the friction loss was 10 pounds per 100 feet of 2½-inch hose and also that with a 1-inch nozzle tip the friction loss is 1/5th of the nozzle pressure. In all of the tests pressure gauges were at the pump discharge and at couplings at 100-foot intervals. Nobble pressure readings were taken with a Pitot tube as shown in the sketch above.

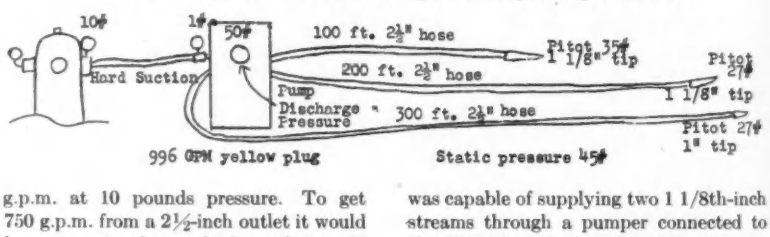
In this test using two 200-foot lines of 2½-inch hose and 1-inch nozzles, there was a difference of only two pounds in the nozzle discharge pressures. Thus the usual calculations were found to be sufficiently accurate for fire ground purposes even when a pumper is supplying more than one line. While the friction loss was slightly above 10 pounds per 100 feet, it is well known that friction loss varies in different grades of hose.

1. Problem. To find whether "rule of thumb" fire stream calculations apply when more than one line is used from a single pump.



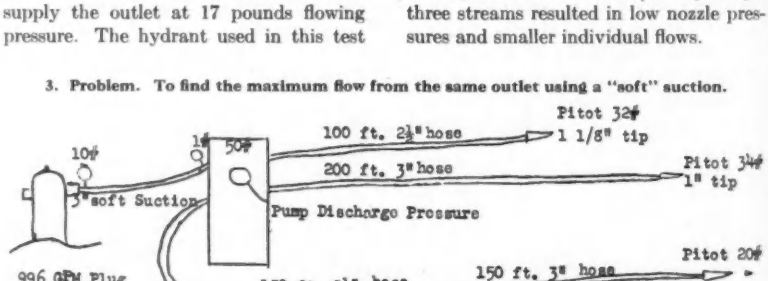
2. Where old non-standard hydrants lack a 4½-inch pumper connection it is often necessary to decide whether one or two 2½-inch outlets will be needed to supply the desired fire streams. In these tests a hydrant having a previously measured maximum flow of 996 g.p.m. was used to supply three streams from a pumper connected to a single 2½-inch hydrant outlet. With 10 pounds flow pressure at the hydrant outlet the total flow obtained was 570 g.p.m. This agreed closely with a maximum theoretical flow from a 2½-inch circular orifice of 590 g.p.m. at 10 pounds pressure. To get 750 g.p.m. from a 2½-inch outlet it would be necessary to have a hydrant that could supply the outlet at 17 pounds flowing pressure. The hydrant used in this test was capable of supplying two 1 1/8th-inch streams through a pumper connected to the 2½-inch outlet but the attempt to get three streams resulted in low nozzle pressures and smaller individual flows.

2. Problem. To find the maximum discharge from a 2½-inch hydrant outlet.



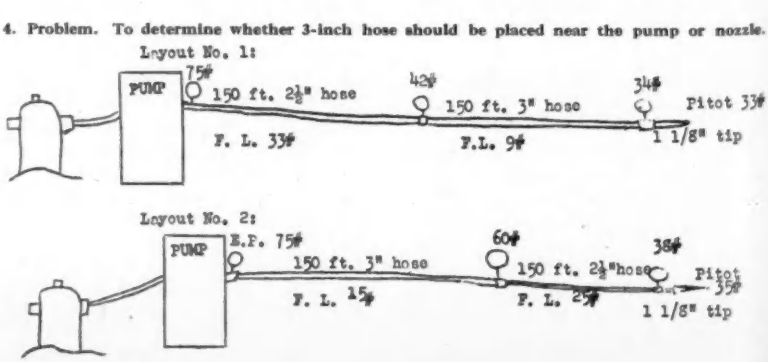
3. Using a 3-inch soft suction from the same outlet and supplying the same sizes of nozzles (but with different hose layout) it was found possible to obtain 551 g.p.m. with 10 pounds flow pressure at the hydrant and the same 50-pound pump pressure. If a larger diameter of soft suction had been used and the same hose layout employed it is probable that the soft suction would have performed as well as the hard suction providing that care was taken not to draw a vacuum and collapse the suction.

3. Problem. To find the maximum flow from the same outlet using a "soft" suction.



4. With a line of half 2½-inch and half 3-inch hose it was found that the friction loss was less, and the nozzle pressure correspondingly greater, when the larger hose was next to the pump. However, the difference in pressure was not enough to affect the usefulness of the stream. A more important reason for placing the 2½-inch hose near the nozzle is that it is much easier to handle a 2½-inch line particularly where it is necessary to advance up stairways or ladders.

4. Problem. To determine whether 3-inch hose should be placed near the pump or nozzle.



5. All firemen are familiar with the fact that the friction loss in 3-inch hose is much less than that in the 2½-inch hose ordinarily used by fire departments. This fact was demonstrated at the Oklahoma Fire College by the layout here illustrated. It was found that with the same engine pressure and the same size nozzle, a 3-inch line discharged more water at higher nozzle pressure than is obtained with 2½-inch hose because the friction loss in the large hose was less than that of 2½-inch hose. This means that with 3-inch hose a desired fire low can be obtained at lower engine pressures thus saving R.P.M.s on pump and motor, or that larger volumes and higher nozzles pressures can be obtained at a greater distance from the pump.

6. To determine the advantage of using a hard suction where there is a very weak hydrant supply, a hydrant was chosen on a 4-inch dead-end main. The caps of this hydrant had been painted red as a warning that a flow of less than 500 g.p.m. could be expected. The actual available flow proved to be less than 200 g.p.m. When using the hard suction it was possible to obtain 21 pounds pressure and a discharge of 171 g.p.m. at a 1 1/8th-inch tip. Using the soft suction it was possible to get only 16 pounds nozzle pressure and a flow of only 150 g.p.m. What was perhaps more important was that when using the soft suction, if the pump started to draw a vacuum it was necessary to disengage the pump to relieve the difficulty. With the hard suction it was possible to work satisfactorily at zero intake pressure

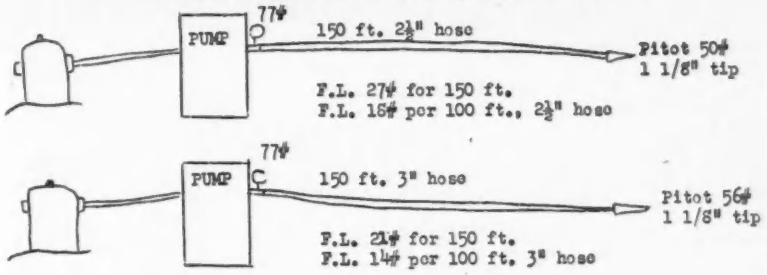
7. A. By using a smaller tip the nozzle pressure on the longer line was maintained slightly above the pressure on the shorter line. This was because the larger flow through the 1 1/8th-inch tip (262 g.p.m.) caused greater friction loss than the 209 g.p.m. flowing through the 1-inch tip on the longer line.

B. Where the same nozzle size was used on both the long and short lines, the nozzle pressure and flow was greater on the short line because less of the available pump pressure was lost in friction while passing through the hose. The tips discharged 209 and 198 g.p.m. respectively.

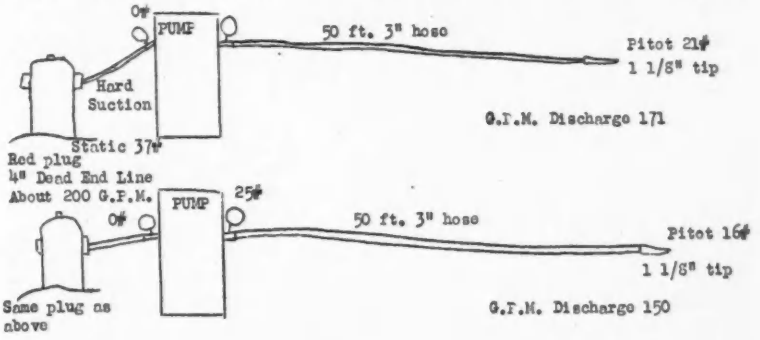
C. This test was the same as test A except that one more section of hose was added to the longer line. The discharge from the 1-inch nozzle on the longer line dropped from 196 as compared with 209 g.p.m. before the line was lengthened. A slight drop in pressure was also noted at the other nozzle.

D. This experiment employed the same layout as C but the pump pressure was stepped up to 95 pounds. This gave a 50-pound stream discharging 265 g.p.m. from the 1 1/8th-inch nozzle on the short line. The longer line using the 1-inch nozzle discharged 223 g.p.m. at the increased pressure of 57 pounds.

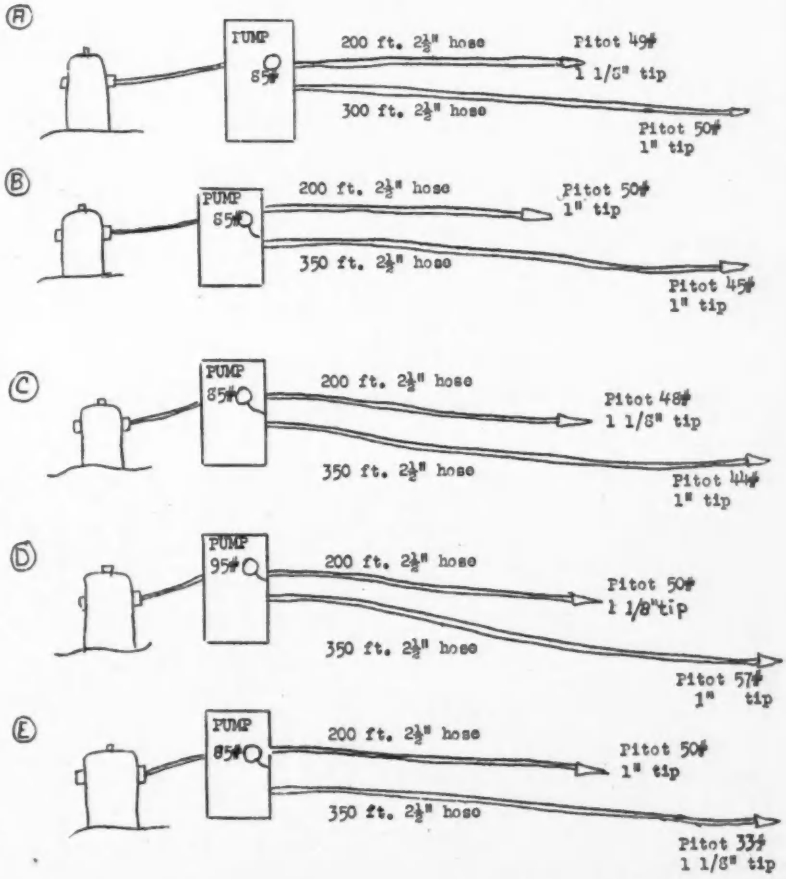
5. Problem. To compare friction loss in 2½-inch and 3-inch hose.



6. Problem. To determine any possible advantage of using a hard suction on a weak hydrant.

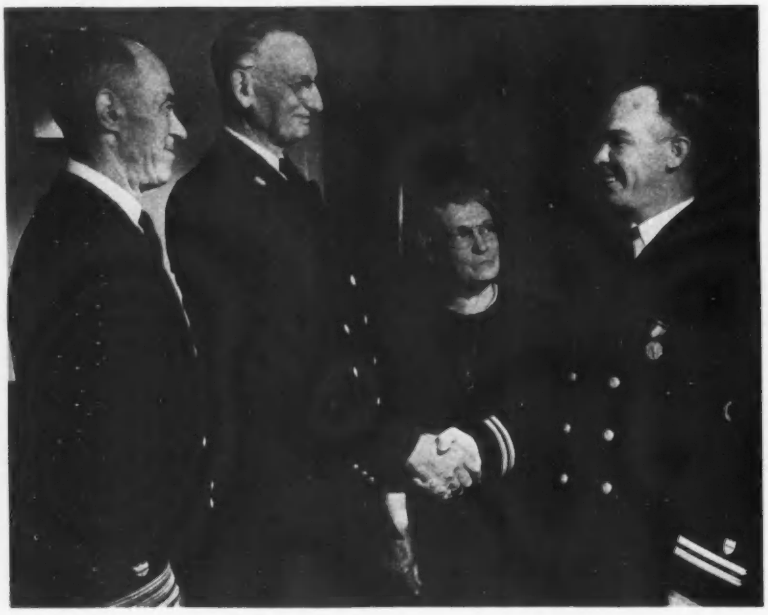


7. Problem. To observe the effect on nozzle pressures when lines of different lengths and tips of different sizes are used.



E. The larger nozzle was placed on the longer line and the pumper operated to give 50 pounds at the 1-inch tip on the short line. This resulted in a nozzle pressure of only 33 pounds at the more distant 1 1/8th-inch tip.

COAST GUARD FIRE HERO HONORED



WHILE serving his country in the armed forces, Coast Guard Lieutenant Sydney G. Carter, for twelve years a Washington, D. C., fireman, was cited for heroic action in battling a fire aboard a gasoline-loaded ammunition ship.

Lieutenant Carter's citation mentioned, "heroic conduct as Officer in Charge of a Fire Fighting Crew aboard the S.S. *Gulfbelle* on October 20–22, after its collision with the S.S. *Gulfland* off Palm Beach. Realizing the peril from unexploded ammunition, Lieutenant, Junior Grade, Carter boarded the tanker with his men and skillfully directed fire fighting operations. Despite the constant hazard he finally succeeded in extinguishing the fire." The citation was signed by the Acting Secretary of the Navy, Ralph A. Bard.

After receiving his citation from Rear Admiral Munroe of the Seventh Naval District, Lieutenant Carter is shown being congratulated by Vice-Admiral Waesche, Coast Guard Commandant, and Chief Stephen Porter of the District of Columbia Fire Department, while his mother, Mrs. Rosa Carter, looks on.

"Where's That Damned Hydrant?"

AT best, hydrants are tricky and elusive things. Example, just when you think you have found a parking space after driving around the block, there, invariably, is the then unwelcome sight of a fire hydrant with all of its unbending "police power" reminding you that no parking is permitted within ten feet of its august presence. But on that cold winter night when blizzard winds are howling and drifting snow obscures familiar landmarks, one of the minor adventures in the life of a suburban fireman is to try to find Fido's convenience station when its usual bright colors have been camouflaged by that crystaline form of water which poets (from inside their steam-heated quarters) invariably term "a mantle of white."

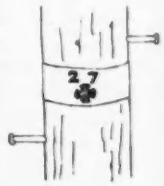
Now a fireman does not have to be a prognosticator or a wizard to know that no matter how faithful are the public works employees and private citizens in shovelling out hydrants immediately after a snowstorm, that will not help in finding that desperately needed hydrant when wind-driven flames are sweeping beyond the control of booster tank equipment.

Some means of quickly spotting hydrants in outlying residential areas is almost a necessity in northern communities.

A number of methods have been devised to accomplish this end and several of these appear to have considerable merit.

Some communities drive a stake or metal post in the ground near the hydrant. This marker is usually painted red or red and yellow. Near the top are a number of small glass reflectors called "cat's eyes" designed to pick up the light from headlights.

A somewhat more complicated system is used in some communities where outlying hydrants are particularly difficult to locate because obscured by brush, weeds, topography or other features. A conspicuous yellow band is painted around the nearest telephone pole, preferably under an electric light although this is not essential. On the side of the pole nearest to the hydrant is painted a red cross and above the cross is a figure giving the exact number of feet to the hydrant. To find a hydrant buried by snow a man starts with his back to the red cross and walks the number of feet indicated before he stumbles over the hydrant. Then comes the usual technique with shovels, hydrant wrenches, thawing devices, etc., and with luck — there is your water.



The marking or identification of hydrant locations is of value at other seasons as well as winter. Tall grass or other objects may obscure hydrants and any good system of marking hydrants so that they can be found at night and during any adverse weather conditions such as fog or driving rain, would appear to be of value as a means of speeding up the job of getting water on a fire.

Fire Boats and Ship Fires

"FIRE Boats and Ship Fires" is the title of Part 7 of the *Manual of Firemanship*, prepared by and for the British National Fire Service. This is a paper-bound volume of 152 pages. It contains a description of fire boats in service in Great Britain including types of boats which have been adapted from other craft for wartime service. There is a section on seamanship, firemanship, and control in fire boat formations of interest to men operating such ships. A section on fires in ships contains a large amount of information never before published, for which all fire fighters will be indebted to the editorial staff of the British National Fire Service. The material is profusely and well illustrated, and thoroughly covers the fire features of ship construction, the fire protection of ships, the problem of stability and flooding, and fire fighting. Under the latter heading, fires in the holds of ships, in tankers, refrigerating ships, passenger spaces, fuel and machinery spaces, are discussed with general and special suggestions.

Part 7 is the fourth volume of the *Manual of Firemanship* which has appeared. This part, as well as Parts 1, 2, and 3, is published and available through booksellers or His Majesty's Stationery Office in the British Isles. These manuals may be obtained in the United States through the British Information Services, Rockefeller Center, New York, N. Y., at 75 cents for each part.

FIRE FIGHTERS BATTLE BLAZE IN NAVY YARD

U. S. Navy Department Photo

A STORAGE building housing the supply department office and warehouse of the Norfolk Navy Yard was destroyed in a fire on August 4th. The fire first broke out at 3:48 P.M. and blazed out of control for several hours. Newspapers estimated the loss at $350,000 or more. The origin of the fire was undetermined.

Official reports on the fire have not been released by the Navy Department, but newspaper reports stated that all the ship's stores for a warship now under construction were lost, along with office equipment and several small trucks.

Marines and Navy men were routed out of their billets to help fight the fire. Chief W. B. Sykes, of the Portsmouth Fire Department, sent three trucks and their crews to aid Chief W. E. Sykes, of the Navy Yard Fire Division, and his fire fighters. The fire was under control by six in the morning.

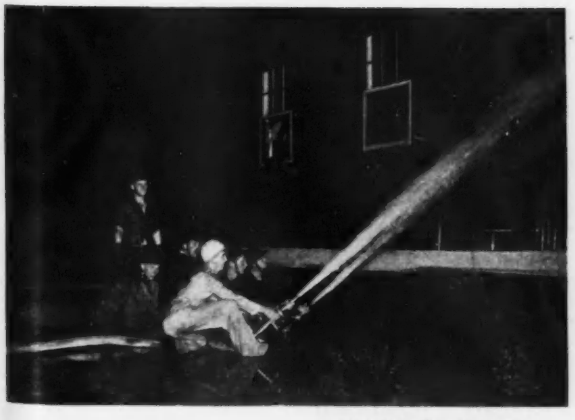
These official Navy Department photographs were made available through the courtesy of Commander E. John Long, Office of Public Relations.

U. S. Navy Department Photo

A powerful stream shoots across the smoking ruins. This is evidence of the damage being done to our war effort by fire.

U. S. Navy Department Photo

Navy and Marine fire fighters brought the fire under control as streams from deluge sets gradually cut off the flames.



U. S. Navy Department Photo

Here firemen concentrate two lines at the office section of the long structure in an effort to cut off the flames. Military personnel removed much of the office content.

U. S. Navy Department Photo

Rivers of water were not adequate to overcome deficiencies in construction and lack of automatic sprinkler protection.

Spontaneous Ignition in Hay

By Courtnay P. Worthington
Inspector, Mutual Farm Underwriters of Massachusetts

A CLEAR and interesting case of spontaneous ignition in hay took place at the C. M. Gunn farm in Sunderland, Mass., on September 20th. As is often the case where the fire is small and the evidence is not destroyed, the point of origin and the cause of the fire could be quite definitely determined.

The owner and his son had noticed an odor and heating in the hay at the west end of the barn about noon and called the fire department which came promptly. When the town's 500-gallon pumper arrived it set up at a water hole built some years ago under direction of the owners in a stream about a hundred feet north of barn. One 2½-inch line was laid to the main barn floor, later to be followed by a second line to the barn cellar.

The owner had wisely not disturbed the hay until the arrival of the fire department and neighbors gave sufficient manpower to control the situation.

The barn is an old-fashioned, heavy framed structure with hay above and cattle beneath, except on the north side where the hay bays extend to the cellar. These bays are about sixteen feet square and twenty-seven feet high from cellar to roof plate. The bay in question was an old square silo with plank partitions and barn wall enclosing three sides in the cellar. The planks had been removed on the fourth side toward the adjoining bay, which was also filled with hay, with no opening between.

THE fire first broke into flame at a crack in the planks in the partition along the passageway to the silo. Just prior to the appearance of the flame the planks were hot to the touch and the strong acrid odor from the hay became mixed with the smell of smoke. The fire was quickly extinguished with the hose which had been laid for the expected emergency. After the fire was out a hole chopped in the partition revealed a small charred tunnel leading toward the center of the bay, but the surrounding hay, which was over a year old, appeared of normal color and not to have been wet except from the hose.

The top layer of hay was pitched onto the barn floor while the oats, which were charred dark brown to black, were thrown outside to be removed later. As the men dug down below the main floor level the acetic acid odor was so strong that frequent trips to fresh air were necessary. Gas masks were brought and used for a short time, but the hard physical labor made the masks uncomfortable and they were soon discarded. Later enough hay was removed so that the ventilation could be improved by cutting a hole in the cellar partition. All hay in the bay was eventually thrown out.

Hot hay igniting when exposed to air.

Glowing sparks and incipient fires were uncovered from time to time as the men dug down towards the bottom of the layer of oats, and hot charred material was exposed to the air. Had not the charged hose line on the barn floor been instantly available the men in the hole would have been in danger, and a serious fire might have developed.

The hay in the bay affected was in three layers. The bottom five or six feet was alfalfa, cut and harvested the year before; the middle layer, of perhaps ten feet, was oats placed in the barn early in the summer this year; the last load on July 1st. The top layer was several loads of first crop mixed hay put in the first part of July. The owner believed the hay and oats to have been in good condition and they had been well salted. There was some evidence, however, that the alfalfa on the bottom, which had been harvested thirteen months previous, had not been thoroughly cured, because there was considerable dry mould evident in the hay that was forked out after the fire.

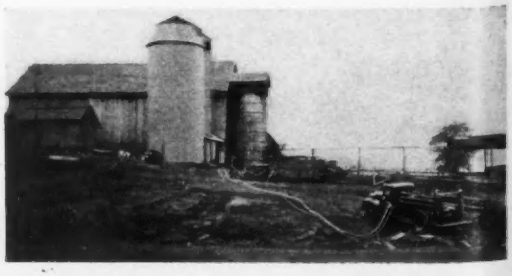
Although the hurricane on September 15th, five days earlier, with a heavy driving rain from the northeast may have caused some water to leak through the walls or roof or come in along the ground, there was no evidence that this had occurred to any extent.

The most likely explanation would seem to be that the oats were not as thoroughly dry as supposed. Also by covering with more hay, the oats were compressed into a bin-like section in the barn cellar with no ventilation and against the old, dry hay. Thus, heat developing could not be readily dissipated. There was evidence that the hay had been heating for some time.

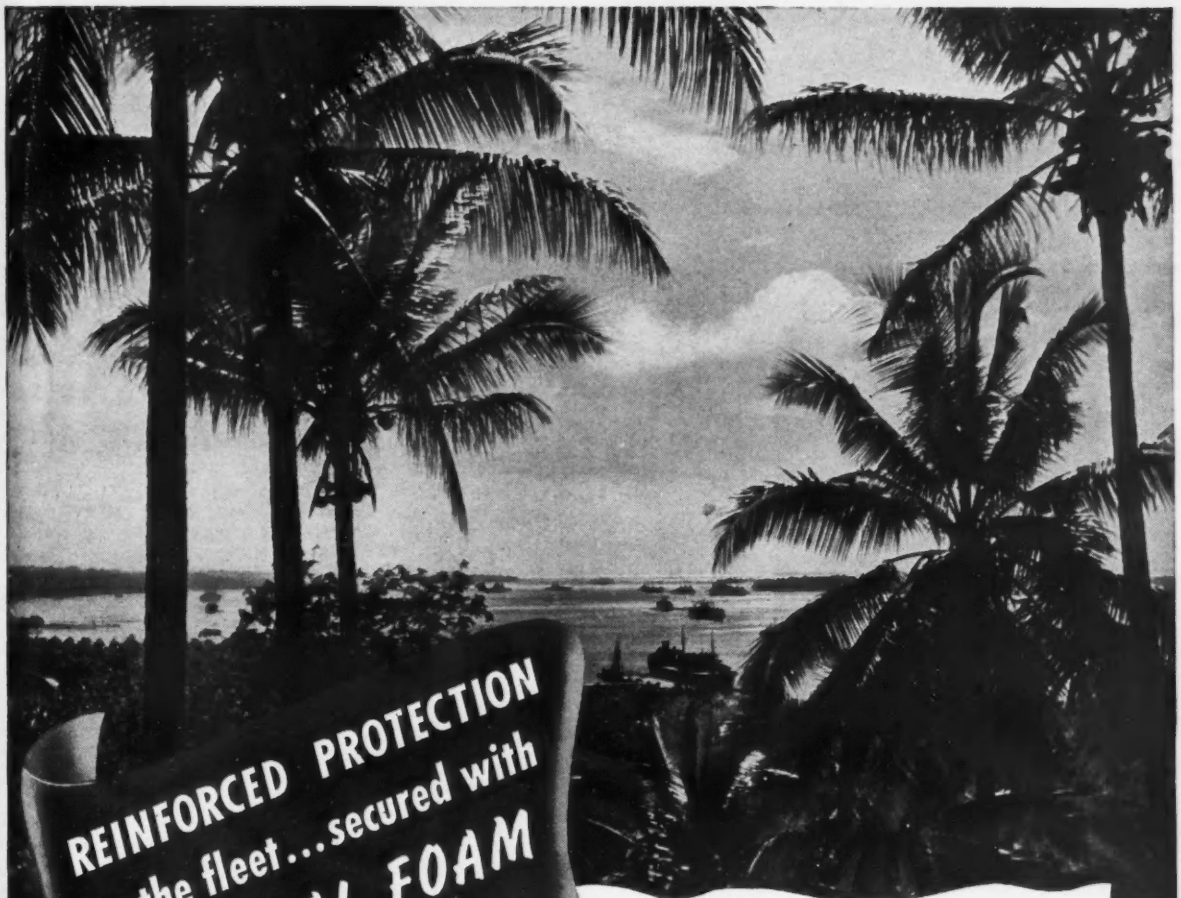
Four rules for safe hay storage appear to have been violated:

(1) Hay appeared not to have been thoroughly cured.
(2) Not properly ventilated in the mow.
(3) Covering one layer of hay that has not completed its "sweating" with more hay.
(4) Great depth of mow.

Conclusion: The owner used the proper and necessary precaution of having the fire department on the spot before pitching out any hay. The volunteer fire department and neighbors showed good judgment and performed a yeoman task in preventing a serious fire. The water hole previously provided by the owner was an indispensible feature in keeping the fire under control. These firemen of a small farming town appeared well informed as to the nature, cause, and proper treatment of the situation they confronted, and handled their job effectively and with intelligence.



500-gallon pumper at farm water hole supplying two lines of hose.



REINFORCED PROTECTION for the fleet...secured with NATIONAL FOAM

"Official U. S. Navy Photograph"

A safe voyage for the Invasion Armada required many types of protection from enemies in the air, on the sea, and under the sea, as well as the dread enemy of all times, a "Fire at Sea." The latter danger is keenly recognized by the U. S. Navy, who has provided fire protection against hard-to-control oil and other hazardous fires with National Foam Fire Fighting Equipment.

National Foam has repeatedly proved itself by quickly extinguishing serious oil tanker and other dangerous fires at sea and are extensively used by the U. S. Navy to help protect the fleet.

For years, many oil refineries and industrial plants have been protected by National Foam Fire Fighting Equipment. Our engineers will gladly consult with you and recommend the type of equipment which will most effectively meet your needs.

IN FIRE DEPARTMENT SERVICE
National Foam System has equipment especially designed for the use of Foam by Fire Departments. Complete engineering service available.

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THE CONTROL UNIT VITAGUARD TYPE

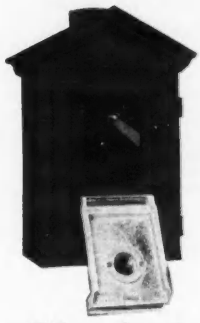
This Unit contains all battery, operating, recording and testing equipment necessary for the operation of a system ranging from One to Forty alarm boxes. We supply complete directions for installing.

THE GAMEWELL SYSTEM for Volunteer Fire Departments provides the essential elements of accessibility, dependability and speed in giving alarms.

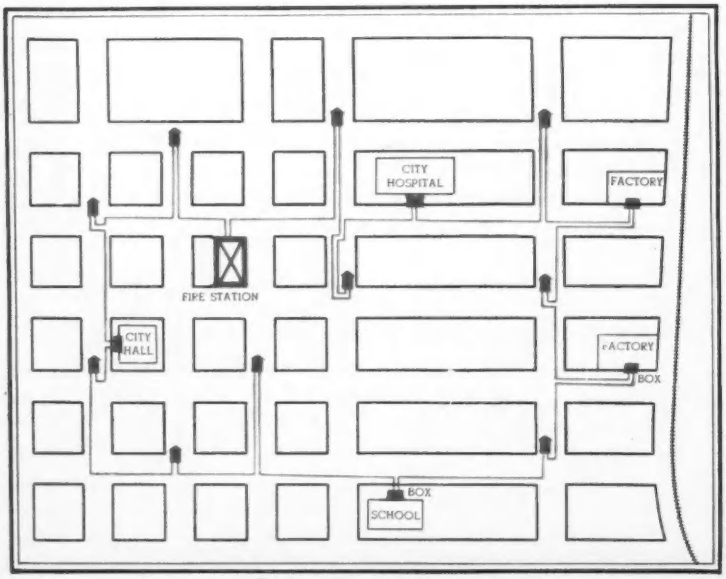
Public fire alarm boxes, quickly accessible, coupled with automatically responsive and coded public alarm equipment *eliminates delay by directing firemen to the scene of fire.*

WE INVITE YOUR INQUIRY.

GAMEWELL FIRE ALARM BOX VITAGUARD TYPE



With guard panel pulled forward exposing operating lever.



TYPICAL PLAN OF SYSTEM

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Operated by compressed air. Has great carrying power, distinctive tone and coding ability. A reserve supply of compressed air is automatically maintained.

NOTE: *Your own public alarm may be utilized and automatically operated by the Vitaguard System.*

Cleveland Explosion and Fire

(*Continued from page 7*)

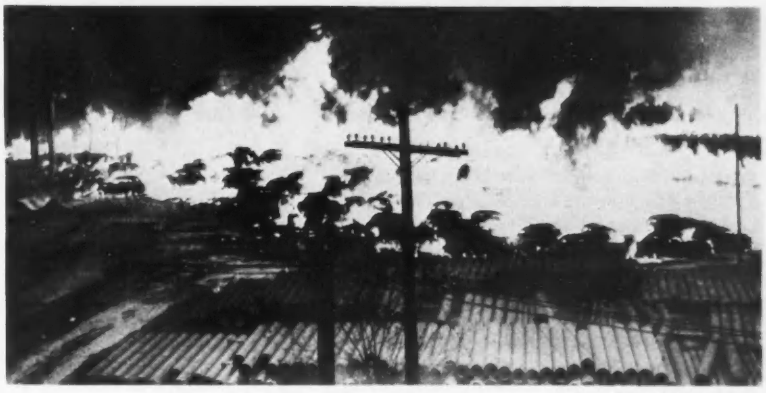
and then jumped to a fifth alarm one minute later. Additional calls brought 10 more engine companies during the next hour and a half. The Fire Department succeeded in making a remarkably effective stop in a congested residential sea of primarily frame construction. Water supplies are said to have been adequate.

It should be remembered that in a fire of this size individual buildings cannot be given special attention by the public fire department. For example, the huge gas company shop building gutted by the fire alone would have called for a fifth alarm fire fighting assignment in any large city. Obviously, most of the effort had to be devoted to protecting exposures rather than extinguishing individual buildings.

In addition to local fire protection, four suburbs sent a total of four engine companies and one ladder company to cover vacated stations. These departments were Cuyahoga Heights, Garfield Heights, East Cleveland and Lakewood.

Acme

View from the New York Central Railroad tracks north of the fire area, showing an old water seal type of gas holder which preserved its contents. In the background is the large sprinklered plant of Bishop & Babcock which escaped with relatively minor damage.



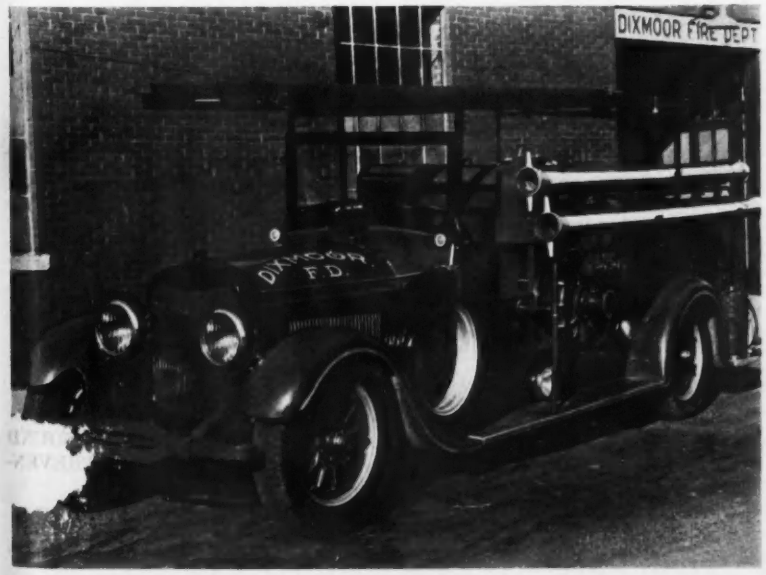
Press Association, Inc.

Like a scene from Dante's Inferno, a sea of flame engulfed automobiles parked in a lot near the fuel gas tanks.

Fighting Fires in Country Elevators

READERS who have obtained copies of the previous editions of *Fighting Country Elevator Fires*, published by the Grain Dealers National Mutual Fire Insurance Company, 1740 North Meridian Street, Indianapolis 7, Ind., will be interested in knowing that another issue of this very exciting little publication has been released by Editor R. D. MacDaniel.

This new edition is crammed full of items of interest to volunteer firemen such as construction of rural fire cistern, firemen's training schools, an open sprinkler system that saved an Oklahoma elevator, details of interesting and unusual elevator fires, a story about a private fire brigade at a small elevator, a description of dust explosion hazards in country elevators, and many other items of equal interest.



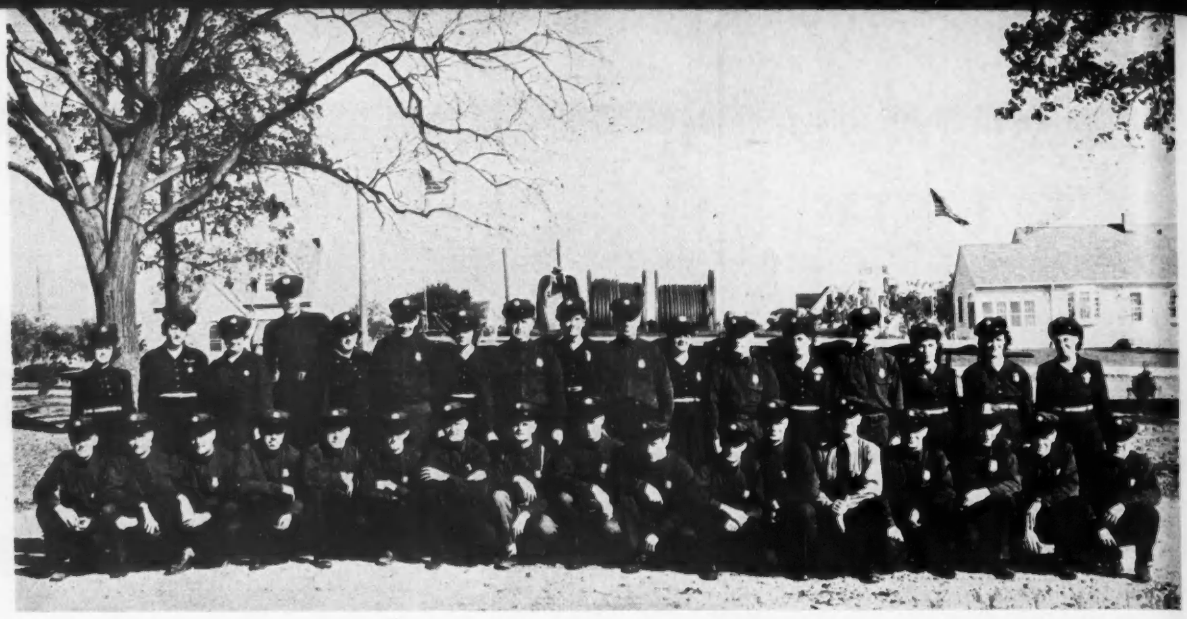
Volunteers Build Pump Rig

AN example of how an OCD-type 500-gal. G.P.M., skid-mounted pumper can be utilized in providing suburban fire protection may be seen in the apparatus of the Volunteer Fire Department of the town of Dixmoor just south of Chicago.

The fire department had a 350 G.P.M. Reo pumper, when, due to the war, the rapid growth of the town brought a need for more fire equipment. The Dixmoor Volunteer Fire Department obtained a Lincoln hearse when the local undertaker gave up his business. They turned the fire station into a work shop and the result of their labor is pictured on this page. The outfit carries 700 feet of 2½-inch hose and 200 feet of 1½-inch hose.

One unique feature of this apparatus is the sealed beam head light mounted on the side of the truck, below the pump. This light is a great help when making hydrant connections at night.

The above description was furnished by Edward M. "Dusty" Rhoades, of the Eureka Fire Hose Co., Division of U. S. Rubber Co., 440 Washington St., Chicago 6, Ill. "Dusty" Rhoades is a friend of many volunteer firemen.



Fire Ladies and Fire Laddies

Reported by Chief Clifford J. Potts

THE volunteer firemen take their wives along when the fire alarm blows in Wauwatosa, Wisconsin. The Hampton Heights Volunteer Fire Department there recruits both men and women as cooperating firé fighters. Many fires occurring in the home are discovered by the women, and in this community the housewives are trained fire fighters.

Three and a half years ago, Chief Clifford J. Potts realized that the ladies on the sidelines had come to know and understand many of the drills the men practised. When he decided to call for volunteers for a ladies' company, they responded 100 per cent. Today the firemen's wives are a well trained and equipped group. They train under their own officers, or at other times, with the men. They both follow standard practices in combating a fire.

The following report is part of a folder that the Hampton Heights Department sent out, as is their custom, to all the residents in the community prior to Fire Prevention Week:

"We are enjoying ourselves in our responsibility. We know that many of you would, too. We know too that many of you desire membership on the department, but owing to daily activity find spare time scarce under pressure of the times. This is well understood and we therefore do not hesitate to invite you to advise and criticize at all times. Our growth and progress is through cultivating open receptive minds. Will you drop us a line or call us by telephone if you cannot appear personally? We shall promptly acknowledge and consider your advice and suggestions. It is invited and appreciated.

"Remember, you do not have to be a member of the department to cooperate! Your cooperation may manifest itself in many ways — hinging, of course, upon circumstances. It may be moral — a word of advice or criticism; a word of encouragement. It may be material — a loan of a tool, an offer of an hour or two of service when convenient, or it may be financial — a possible donation to the treasury. On the other hand, your cooperation with the department may manifest itself in your requesting *our* services now and then when a situation might arise involving safety. Since Fire Prevention Week — 1943, we have had numerous calls of this nature.

"Not long ago a housewife in the subdivision called the department when she thought she detected gas fumes in her basement. One of the men went to her home and discovered a rather sizeable leak in the gas meter. He notified the gas company who repaired the leak. This could have been serious, but the housewife realized the possibility of danger and requested the advice of the department.

"Another party was in doubt about the safety of his coal pile placed not far from the gas water meter.

"Still another saw a situation which she thought presented danger. Following a storm, the electric wires running from her home sagged so that instead of being tense as usual, they lay for a short space on the shingles of her home. She was advised to call the electric company to 'take up' the wires.

"Another housewife discovered a blown fuse and a smoking washing machine motor. Her husband was not home and her first thought was the fire department. Having called, a member was sent to her home who relieved the washing machine trouble until she could have it repaired, and she was carefully instructed as to how to install a new fuse.

"Not long ago when a three-year-old child had her finger crushed in the door, causing a wound which required a number of stitches, a member drove the mother and child to the nearest physician.

"One of the young boys sustained a serious injury climbing the cemetery fence. A member of the fire department administered first aid.

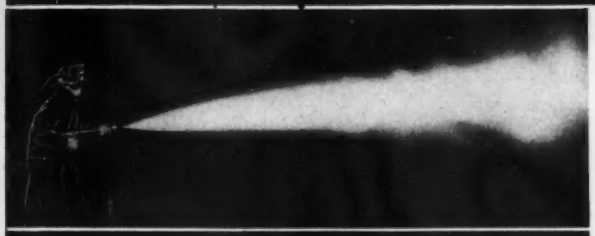
"Many residents of the subdivision have come to the firehouse during the year to find out how to sound the fire alarm. Others have brought their relatives and friends to look over our equipment.

"Many have called to request an inspection of their homes with regard to wiring, Christmas decorations, storage of fuel, oil mops, cleaning fluids, etc.

"Yes, we have our trouble-shooters who aim to assist especially when the head of the house is absent and a mechanical problem presents itself. These above mentioned situations are examples of excellent forethought in time of trouble. . . . They are examples of fine cooperation with the department. We encourage these — no matter how trivial they seem to many of us. It is these that help to make us realize our cause is not being defeated. Where safety is a question, we pledge to cooperate.

"Our records for the year show several fire calls, and we are happy to report not many. The efficiency rating of a fire department, as you all know, is not based upon the number of fire calls received per given amount of time, but rather upon the estimated number prevented by SOUND and SCIENTIFIC FIRE PREVENTION.

"Evalin Fischer, Secretary.
"Hampton Heights
"Volunteer Fire Department"

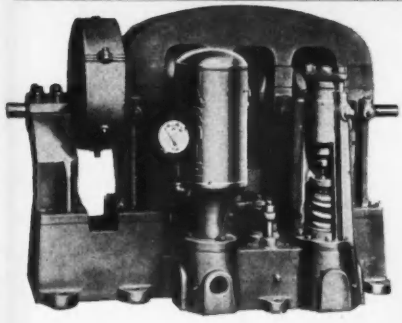


Make Sure Of Perfect Atomization Complete Control

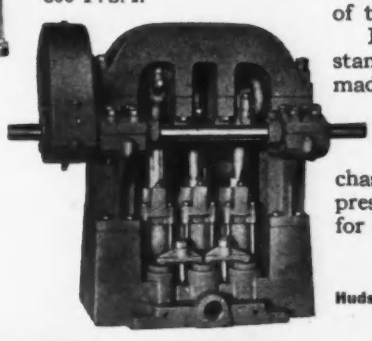
● An ever increasing number are recognizing the Fog Fire Fighter as a necessary and valuable auxiliary equipment. Sooner or later you are going to have one. Specify a Hardie pump and a Hardie Fog Gun in the Fog Fire Fighter you buy and be assured of a full measure of the benefits of this amazing new method of fire control.

The Hardie pump gives you 800 P. S. I. at the nozzle easily, at slow operating speed together with ample volume—35 to 60 gallons per minute. The Hardie Fog Gun delivers a completely atomized, fine steam-like fog which can be changed instantly into an intermediate spray combining fog with a fine driving stream, or to a solid stream of terrific force to drive fire from any selected point. Ease of transition from one type of application to another is provided by single-trigger control of gun, operated by the mere pressure of the fingers.

Hardie Fog Fire Pumps and Guns are standard equipment in Fog Fire Fighters made by leading manufacturers of complete Fog Fire Trucks. Existing equipment can be readily converted into a fog fire unit by mounting a Hardie pump on the old chassis. Consult the manufacturer of your present unit for such conversion data. Write for complete specification data.



● The Hardie is a big, strong vertical crankshaft-driven pump built for sustained high pressure under all conditions of use. At left, the Hardie Imperial LCXA delivering 60 gallons per minute at 800 P. S. I. Below the Hardie Imperial XCXX 35 gallons per minute at 800 P. S. I.



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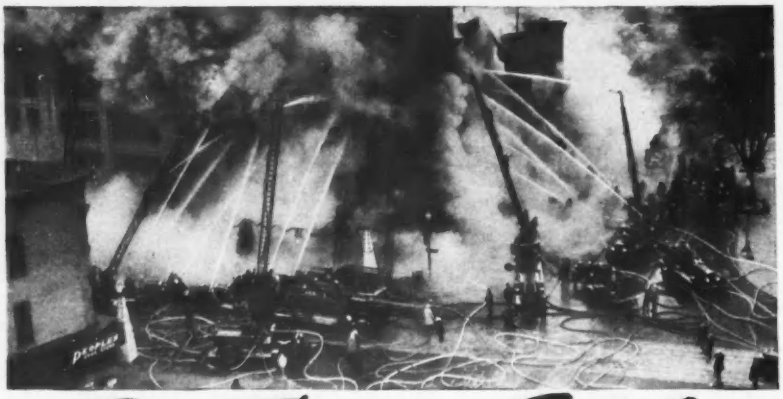
High Pressure PUMPS AND FOG GUNS for Fog Fire Fighters



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with FEDERAL Sirens

A FEDERAL Siren that combines a powerful tone and a brilliant oscillating red light.

Making a fast start to a fire isn't enough—it is equally important to get there safely in the shortest possible time. That is where FEDERAL Sirens come into efficient use. They offer the utmost in audible signals to which may be added visible warning, if desired.

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- Lining held by snap buttons
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Rights of Volunteer Companies Recognized in Surplus Property Law

MANY millions of dollars worth of government property will become available for distribution as surplus materials as victory approaches. The Congress of the United States has passed and the President has signed a "Surplus Property Disposal Law — 1944." This law distinctly recognizes the interests of volunteer fire companies as well as local governmental agencies and non-profit institutons, when surplus materials are available for disposal.

Section 13 (2) of the new law reads: "Surplus property shall be disposed of so as to afford public and governmental institutions, non-profit or tax supported educational institutions, charitable and eleemosynary institutions, non-profit or tax supported hospitals and similar institutions, States, their political subdivisions and instrumentalities, and volunteer fire companies, an opportunity to fulfill, in the public interest, their legitimate needs."

In a letter to N.F.P.A. General Manager Bugbee, dated October 31, 1944, Nicholas A. Odom, Chief, Fire Protection Section, War Production Board, gives the following information that should be of interest to fire departments interested in the possibility of obtaining surplus fire fighting equipment from the Government.

"Within the past three weeks we have had a multiplicty of inquiries and applications from municipalities regarding the acquisition of war surplus fire apparatus. It is deeply regretted that we have been unable to give our many friends in the fire service any encouragement or assistance in this connection because priority is not in any instance being granted applicants to purchase this equipment.

"Now, as you no doubt know, the military forces have adequately met their needs within the continental limits of the United States. The needs for apparatus for the protection of vital military installations in the various theatres of war, however, are still gigantic. In view of this any apparatus not urgently needed here now is being vamped for service overseas. Therefore, the possibility of acquiring a fire apparatus from war surplus at this time is exceedingly remote.

"For those who are desirous of postponing the purchase of apparatus until such time as war surplus shall be made available we suggest that the potential vendees report their names and addresses, and the type and capacity of equipment desired, for registration with the proper disposal agency (local or regional office, Procurement Division, Treasury Department). It is our understanding that the disposal agency will notify each vendee when the equipment is available within the region in which he resides."

IN MEMORIAM

MANY readers of VOLUNTEER FIREMEN (October, 1943) may remember the description of the home-made ladder truck built by the firemen of Stillwater, Okla.

The department had new ladders but no truck on which to mount them. The truck finally evolved right in the fire station which had been turned into a work shop. Now this truck has been replaced.

A former member of the Stillwater Volunteer Department, S 1/c William D. "Purp" Thomas, U.S.N., after hearing of this change in the local department, sent home the following poem and drawing which might bring back memories of other old-time fire trucks which have gone to their reward.

This poem and drawing appeared in *The Booster Line*, Stillwater Fire Department publication, Assistant Chief Everett Hudiburg, Editor.

My chassis is bent,
My tires are hard
But I don't have flats,
Nor my finish marred.

I don't go far
Nor I don't go fast
And going to fires
I finish last.

I'm pretty mean I guess
The way I snort and buck
But it makes me hot
When I stop to think
Of that "Aerial Ladder Truck."

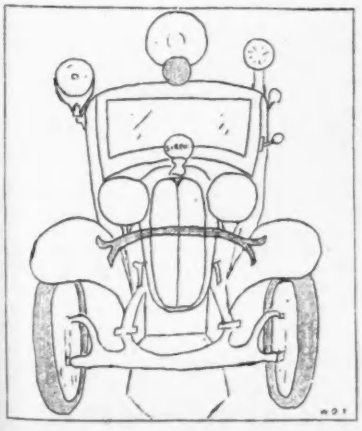
The time has come
I see it all now,
After all I've done
They give me the scow.

They've traded me off
To a machine shop here,
Regardless of my pride
I feel sort'a queer.

No more caressing
Each morning by those,
Who bring forth a chamois
To powder my nose.

I have settled down to work
No more fire thrills
For I'm doing my duty
As an old well drill.

Should I meet some time
With that "Aerial" their pride,
I'll "show 'em" or "bust 'em"
Dad burn their hides.

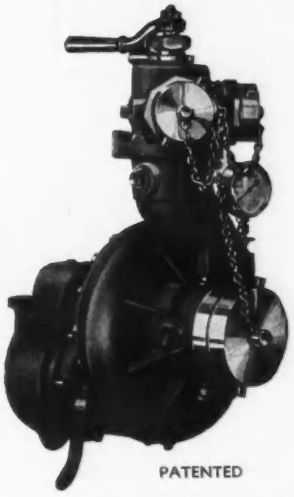


Barton-American Front Mounted

AMERICAN-MARSH PUMPS

Barton-American Midship

FIRE APPARATUS CENTRIFUGAL PUMPS



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AUTOMATIC VACUUM PRIMER

HIGH PRESSURE AT LOW ENGINE SPEED

BOOSTER TANK OPERATION WITH TRUCK IN MOTION

Offered in capacities from 250 to 600 G.P.M.

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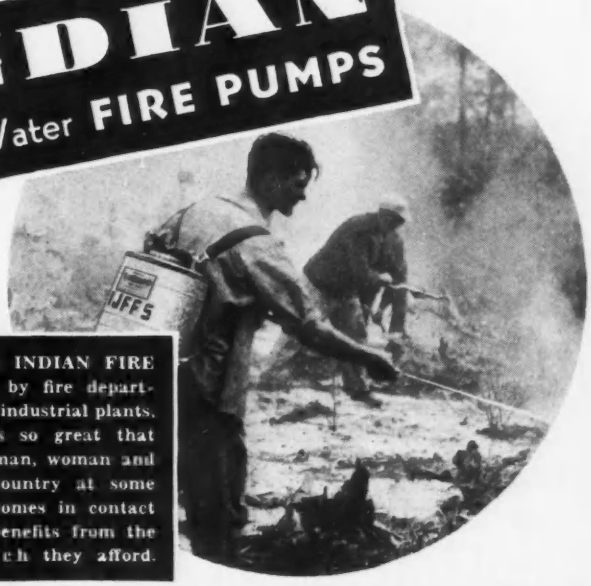
Pumps—and pumps only—since 1873

INDIAN

Clear Water FIRE PUMPS



The number of INDIAN FIRE PUMPS in use by fire departments, foresters, industrial plants, farmers, etc., is so great that virtually every man, woman and child in this country at some time or other comes in contact with them or benefits from the protection which they afford.

USE INDIAN FIRE PUMPS ON INSIDE and OUTSIDE FIRES

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FIRE HOSE DRYER
- Is easier to use
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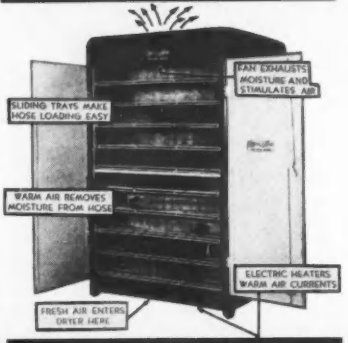
FAN EXHAUSTS MOISTURE AND STIMULATES AIR
SLIDING TRAYS MAKE HOSE LOADING EASY
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Oscillating Red Beam Sweeps Far Ahead — Clears YOUR Side of Road.

● FAST ● SAFE
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WRITE FOR NEW EMERGENCY LIGHTING BULLETIN NO. 144.

CARPENTER MFG. CO.
"MASTER ★ LIGHT ★ MAKERS"
168 SIDNEY ST.,
CAMBRIDGE 39, MASS.

Historical Development of the Fire Hydrant

Continued from page 10

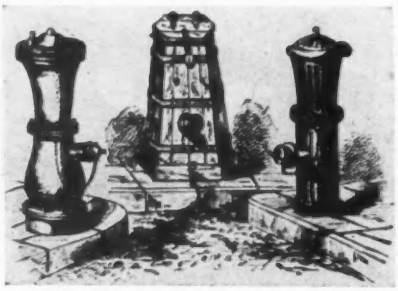
has secured for his 'machine,' and can maintain his position better against the next comers, than (sprawled)* over a flush case, without such salient points; beside this it takes the hose a shade easier, he thinks, and it certainly looks better in the engraving of his certificate or the elaborate art adornments of his engine and engine house."

The limitations and defects of these early hydrants were noted and recorded in the reports from the various cities. Improvements of the steam fire engine called for increased flows and sturdier construction. The low temperatures of the northern cities caused great damage to fire hydrants and led to many remedies and improved hydrant construction. Insufficient flow and excessive friction were in part due to the hydrant construction, and also to the inadequacy of the feeding mains. To overcome this, larger mains were provided, hydrants were set at closer intervals and the calibre of the branch and the hydrant was increased.

The following quotations from Municipal Reports will serve to illustrate some of the difficulties encountered.

Detroit reported in 1855:

". . . It will be seen that the action of frost is the principal cause of injury and damage to the fire-plugs. The fire-plugs in this city, which are the same as those used in every other city in the country, are unsuited to the severe tests of northern winters. A fire-plug that shall be so complete as to meet all the objections to the present kind, is a very great disideratum. From all places where they are used the same complaints are heard. The only remedies that appear to be applicable in their use are to drain them (as most of them are in this city), and during freezing weather to allow none of them to be opened unless when required for use at fires."



Early New York City Hydrants. Right and Left, A B & C or Ayers, Manufactured by John McLean, New York.

From Philadelphia Report of 1858:

"Great difficulty has been experienced in procuring an adequate supply of water for them (steam fire engines); this has in part been remedied by applying the suction of the engine immediately to the plug; while this gives a much better supply of water, the ram or concussion produced by the operation of the pump, loosens the joints of the plug in some of the connections and in one instance the main was burst; to remedy this defect and also to give a more copious supply of water, the Department has constructed a fire plug of much larger dimensions that that now in use, and which has the addition of an air chamber to it, to receive the ram of water. It is hoped by means of this that the steam fire engines can be worked without the city being put to the expense of constructing large cisterns to pump from."

McElroy, states in the March, 1865, issue of the *Journal of the Franklin Institute:* ". . . good old, square blocked Philadelphia is ingenious in turning hydrants into suction tubes, . . ."

The annual report of the Philadelphia Bureau of Water, for the year 1865 comments at length on fire hydrant design and operation difficulties. Since this report is representative of many similar reports from other cities, extracts from the report are quoted:

"The fire plugs now used in this City are principally made from what is known as the old Fairmount pattern; and they are placed upon the sidewalk, against the curbstone.

"The connections to the street mains are generally made by a four-inch branch and a four-inch pipe laid to the side of the street, where a hydrant bend is attached; this is a pipe curved up, with a tapering bell enlarged, so as to receive the fire plug or standpipe; this bend has lugs cast on it to receive the stirrups by which the plug is kept in its place.

"The plug or standpipe is a pipe enlarged at the bottom to allow room for the valve, and the passage of the water around it. The valve is conical, and made of leather; it is operated by a rod passing up through a stuffing box on the top of the stand. The valve is opened and closed by a screw worked by a handle.

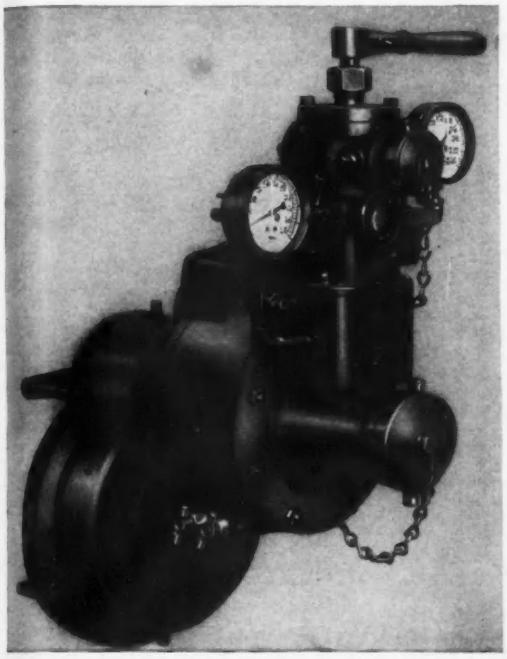
"These plugs do not answer satisfactorily for the steam fire engines, and whenever a fire occurs almost all of them used by the steamers require repairing. This pattern of plug, however, has so many good features about it, that it is difficult to improve upon it, and notwithstanding a number of patented plugs have been introduced, the one most used is substantially the same.

"The department constructed a plug in 1861, when the steamers were first introduced; a number of them are in use. The difference between this and the old Fairmount plug is in the size of the standpipe and outlet, and in its furnishing accommodation for three connections; but the principal difference is in the air chamber placed outside and enclosing the standpipe; this is intended to receive the ram of the water produced by the pumps of the steamers, and prevent it from destroying the mains and other water fixtures. The steamers are now so arranged as to prevent this concussion, and the air vessel is no longer necessary.

"The department is now using the plug which . . . is very much like the old Fairmount plug. The alterations are in the enlarged size of the standpipe and outlet, being fully equal in area to four inches in diameter. The plug is lengthened so as to place the valve deeper in the ground; the waste is arranged to draw all the water

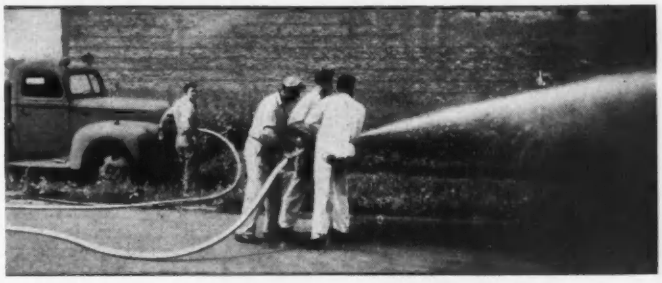
(*Continued on page 26*)

1000 Lbs. Pressure or 300 Gallons



Weight only 180 lbs. Easily installed on any new truck chassis or Fire Truck now in service. Front mount gear drive off crankshaft. Because it is a centrifugal, the Champion will handle without injury, water with sand, dirt and gravel content which would damage the cylinders of piston pumps.

The NEW Front Mount Two Stage Centrifugal Champion is the ONLY Fire Pump That Gives You 300 Gallons for Standard Hose Lines or 1000 lbs. for High Pressure Fog



300 G.P.M. @ 150 LBS.

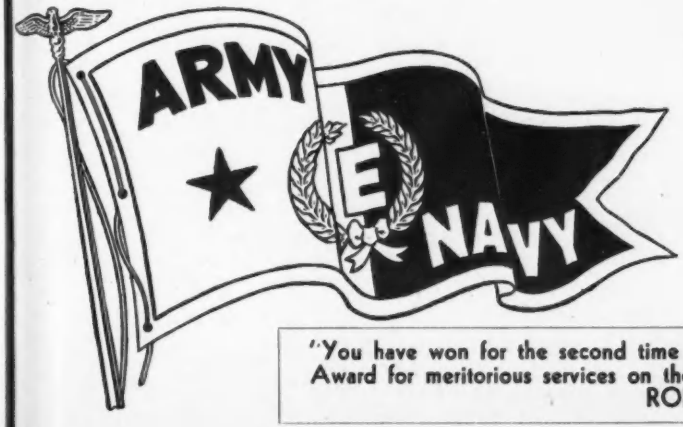
60 G.P.M. @ 880 LBS.

New 100 Page Catalog
OF FIRE EQUIPMENT

FIRE TRUCKS — HIGH PRESSURE FOG PUMPS — STANDARD FIRE PUMPS — SKID PUMPERS — PORTABLE PUMPERS.

REQUEST YOUR CATALOG TODAY!

"EVERYTHING FOR FIRE DEPARTMENTS"



W. S. DARLEY & CO.

ESTABLISHED 1908

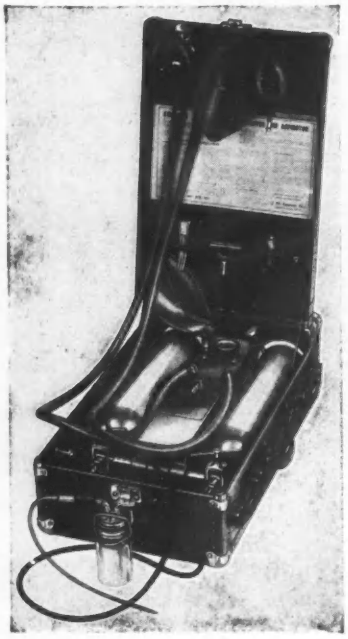
CHICAGO 12, ILLINOIS

CHAMPION

FIRE TRUCKS and FIRE PUMPS
MIDSHIP and FRONT MOUNT

"You have won for the second time the Army-Navy Production Award for meritorious services on the production front"
ROBERT P. PATTERSON, Under Secretary of War

You Can't Afford To Be Without a Good RESUSCITATOR



Don't take chances with smoke-suffocation, drowning, electric shock or other asphyxia. When it comes to life-saving, have only the best—buy

EMERSON

•

J. H. EMERSON CO.
24 Cottage Park Ave.,
Cambridge, Mass.
Representatives in Principal Cities

Historical Development of the Fire Hydrant

(*Continued from page 22*)

from above the valve, and the goose-neck and stands are permanently connected by flanges bolted together, instead of the socket and stirrup, as in the old plug.

"This plug answers perfectly, and furnishes a full supply to a steamer; it is enclosed in the same case as the old plug, and can be substituted, as is done whenever repairs are necessary. All the new plugs now made by the department are of this kind.

"During the year it has been necessary to repair 1,283 plugs, at an expense of about $8,000. Many of the plugs are wantonly broken by the firemen, who ought to be equally interested with the department in keeping them in repair. When a number of steamers are collected near a fire, they exhaust the capacity of the mains, and some of them find it impossible to procure a supply of water; at such times plugs in perfect order are wantonly destroyed.

"There is, perhaps, not a single locality where over twelve steamers can be supplied with water at the same time, so as to concentrate their force upon a burning building, and when a larger number are in service, they only create confusion and trouble.

"Every winter some of the plugs are frozen, notwithstanding the care and attention bestowed upon them. Some years ago, it was the habit of the department to pack them with hay or straw each winter. But this was found to be no protection when the packing became wet; and when frozen, it was almost impossible to thaw them. The packing has not been resorted to for the past six years, and a less number have been frozen."

A review of the patents issued between the years 1850–1864 reveal that 15 devices were offered to improve ventage or draining, 10 devices on valve improvement, and 3 devices on frost protection. Some of the improvements suggested were quite unique, for example: A combination hose hydrant and hitching post; a combination hydrant and pump with valves operated by steam; and a gas burner built into the hydrant case to prevent freezing.

In 1897 and 1898 exhaustive friction tests were made on hydrants by Mr. Charles L. Newcomb, M.E., at Holyoke, Massachusetts. As a result of these tests, friction losses were given greater consideration in the design of the water way and the hydrant outlet.

The fire hydrant of 1944 is a far cry from the "plug" pulling days and the water hole in the street, but in general pattern is not so distant from the post type hydrant introduced in Philadelphia early in the nineteenth century.

---

*Mr. Clarence Goldsmith, for many years an active member of the A.W.W.A. and the N.F.P.A., had cooperated with the author of this paper in supplying many of the photographs of early American hydrants shown herein and data relating thereto. Many years ago when Mr. Goldsmith, now assistant chief engineer, National Board of Fire Underwriters, was supervising surveys for the Board, he made it a practice to locate and photograph old (middle-era) American fire hydrants. He instructed his engineers to be on the alert for such "Industrial Americana," and at times literally "tore up the earth" to find such hydrants. A number of the fire hydrants illustrated are still in use in parts of the country; many are no longer manufactured.

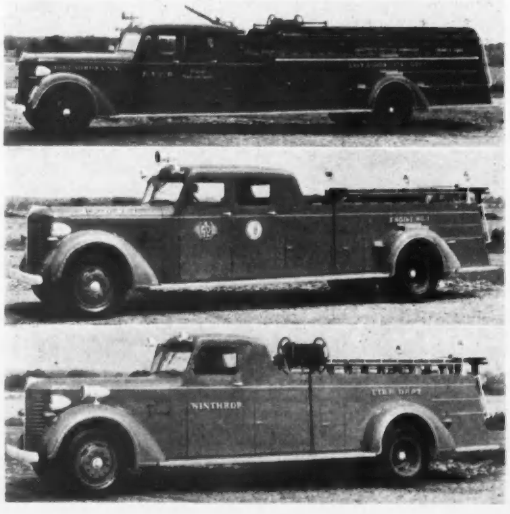
•

FIRE SERVICE MEETINGS

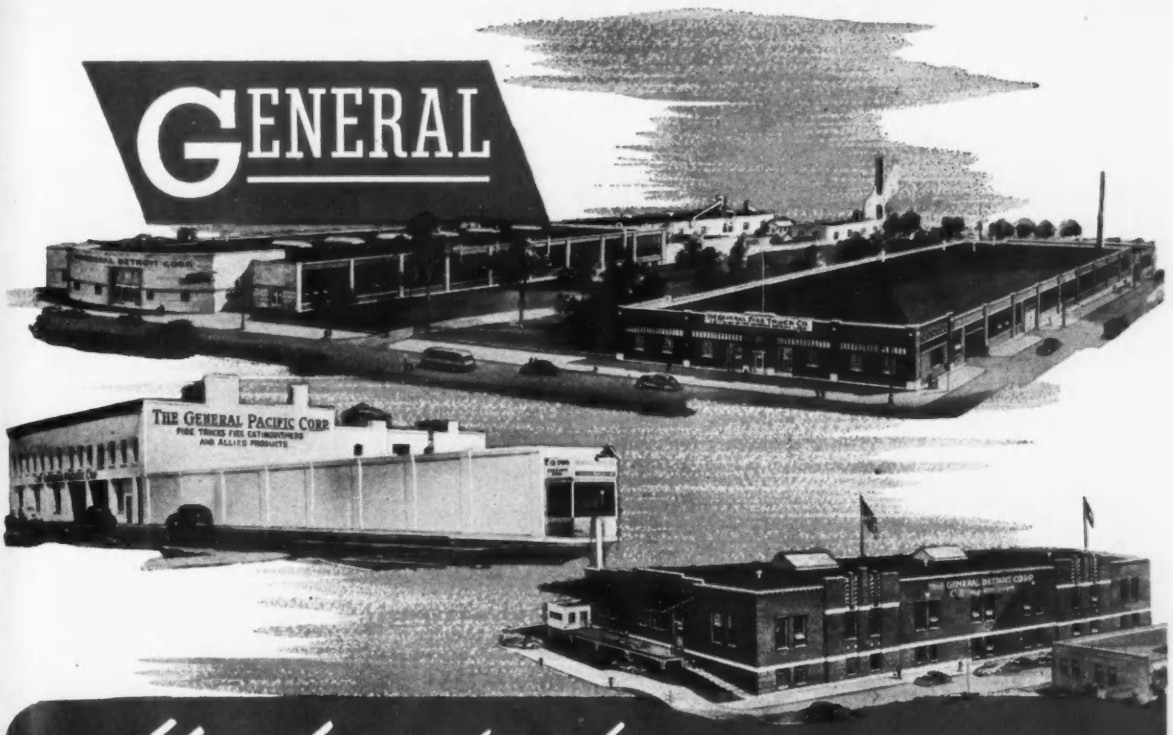
Miami, Florida. The Florida State Fire College was held the week of October 23–27. During the five-day program the following subjects were covered: Forcible Entries; Small Tools, Appliances and Practices; Ladder and Rescue Practices; Apparatus, Hose and Fire Stream Practices; Salvage, Overhaul and Ventilation; and Fire Department Instructors' Training.

North Platte, Nebraska. The Nebraska Fire School and Convention registered a total of 500 on October 18. Chief J. Ray Spence, Secretary-Treasurer of the Oklahoma Fire Chiefs' Association, reported this convention as scheduling the highest in educational programs.

Some Recent Apparatus Deliveries



APPARATUS shown here was built by the Buffalo Fire Appliance Co., of Buffalo, N. Y. *Top:* This 750-g.p.m. "quad" with a 7-man all steel cab was delivered to the Village of East Aurora, N. Y. *Middle:* Athens, Ga., has this new 750-g.p.m. triple combination pumper. It also is equipped with a 7-man cab. *Bottom:* 750-g.p.m. pumper delivered to the Winthrop, Maine Fire Department. It is powered by a Hercules HXC 186 BHP motor and has a cab accommodating three or four men. Safety glass is used throughout in all three pieces.



Headquarters for
FIRE PROTECTION

IF YOU DON'T KNOW FIRE PROTECTION EQUIPMENT, KNOW THE MAKER.

General Detroit has been specializing in the design and manufacture of this type of equipment for more than forty years. In that time it has pioneered in the development of many of the most efficient methods of combating the menace of fire.

Its extensive plant and personnel, located in branches and distributive outlets from coast to coast, are dedicated to the task of reducing the needless waste of life and property that fire creates.

These are reasons why, among leaders in all fields of American industry, General's reputation for integrity of product, dependability of performance, and speed and quality of production is well known.

The experience of these leaders, based on use, convinces them that—

if it's GENERAL *it's dependable.*

THE GENERAL DETROIT CORP.

2270 E. JEFFERSON AVE., DETROIT, MICH.

CHICAGO *Distributors in all principal cities* NEW YORK

West Coast Affiliate: The General Pacific Corp.
Seattle • LOS ANGELES • San Francisco

S-O-S Fire Guard vaporizing liquid fire extinguisher is the only one quart extinguisher in the world with these exclusive features:

- Safety Phlare assures *new* pump action at all times.
- Panic-proof lock releases with right or left turn.
- One-piece cap design for added strength, longer life.
- And nine other outstanding features by "GENERAL."

FORESTRY VETERAN IN CALIFORNIA RETIRES

FROM the *News Letter* of the California Dept. of Natural Resources, Division of Forestry, comes the announcement that "State Forester M. B. Pratt, veteran of nearly forty years of California forestry service, and the man who built up the State Division of Forestry from four office workers to a state-wide fire-fighting organization of approximately 2,000, announced his retirement on a voluntary basis next January 1."

•

BIG RURAL FIRE

ONE of the big rural fires reported in recent weeks was the destruction of three large barns at the Driggs Dairy Farm in Palmyra, Mich. on October 19. The fire started at 2 A.M. and broke out simultaneously in the haymows of two barns, forty feet apart. Flames flashed from end to end almost at once and very quickly spread to a third barn attached to one of the burning structures. Several carloads of baled hay and other feeds, as well as 64 head of young cattle and 25 trucks were destroyed. Fortunately the wind blew away from nearby tenement houses, as well as two large garages, milk bottling building, refrigerator building and shop. Fire fighters saved some young cattle but could not get any trucks out as everything burned so quickly.

The fire was discovered by the owner's mother-in-law and an alarm was turned in by telephone. Firemen were aroused by the ringing of school bells. Chief Fred E. Jackson of the Palmyra Volunteer Fire Department reports that his department used eight 35-gallon charges of soda-acid chemicals, the Arian, Mich., rural pumper used 3,500 gallons of water and chemicals. The Bliss, Mich., Fire Department sent two trucks with tanks and pumps and used 25,000 gallons of water. The water tower on the property was within 400 yards of the fire and 2½-inch hose was used to fill the tank trucks. The cause of the $200,000 fire is not known. The owner had inspected the property at midnight when the electric power was normally shut off until 3 A.M. when milking begins.

•

ONE FOR THE BOOKS

A RECENT fire in a clothing factory in Memphis, Tenn., was promptly extinguished by automatic sprinklers. The sprinkler alarm bell ran for thirty minutes but nearby workers did not know it was a fire alarm. Finally, a passerby thought the ringing of the water motor alarm was a burglar alarm and called the police, who, upon arrival, radioed the fire department. Due to excellent salvage work by the fire patrol, the loss was limited to $400.

E & J RESUSCITATOR INHALATOR AND ASPIRATOR

★

For the administration of Artificial Respiration, effectively and safely, in all desperate cases of respiratory failure.

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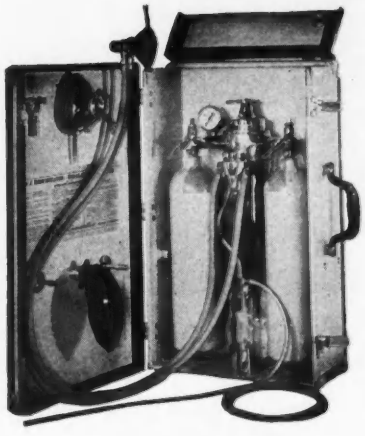


THREE IMPORTANT INSTRUMENTS COMBINED IN THE ONE E & J UNIT

The RESUSCITATOR automatically breathes for a non-breathing patient, The INHALATOR is a source of Oxygen for patients breathing through their own efforts, The ASPIRATOR removes obstructions from the patient's throat. Any one of these three vital operations are made available immediately by the turn of a single lever. E & J units can be used for adults, children or infants and are extremely simple to operate.

WE INVITE YOUR THOROUGH INVESTIGATION OF THE GREAT LIFE SAVING RECORD OF THE E & J RESUSCITATOR, INHALATOR AND ASPIRATOR.

E & J MANUFACTURING CO.

GLENDALE, CALIFORNIA

Drexel Bldg. Philadelphia — **17 East 42nd St. New York City** — **530 Fernando St. Pittsburgh** — **581 Boylston St. Boston**

2144 No. Springfield Chicago — **3032 W. 25th Ave. Denver** — **3900 Grandy Ave. Detroit**

5005 Euclid Ave., Cleveland

Pioneers and Specialists in Mechanical Artificial Respiration

600 LBS. GUN PRESSURE!

FIGHT FIRES THE MODERN WAY WITH FMC HIGH-PRESSURE FOG

YOU GET ACTION — FAST! *This small town hotel is typical of the type of structures to be found in rural communities. Many are located far away from water supplies — far away from low-pressure pumpers. As the FMC High-Pressure Fog Fire Fighter travels fast and carries its own water supply, it knocks down a fire quickly.*

YOU GET THE REAL "BLASTING" FIRE-KILLING FOG WITH THE FMC HIGH-PRESSURE FOG FIRE FIGHTER

In fighting fire with fog — *you must have high pressure.* And that's what you get with the FMC Fog Fire Fighter.

The FMC High-Pressure Pump easily delivers and maintains *800 lbs. pump pressure*—better than *600 lbs. nozzle pressure.*

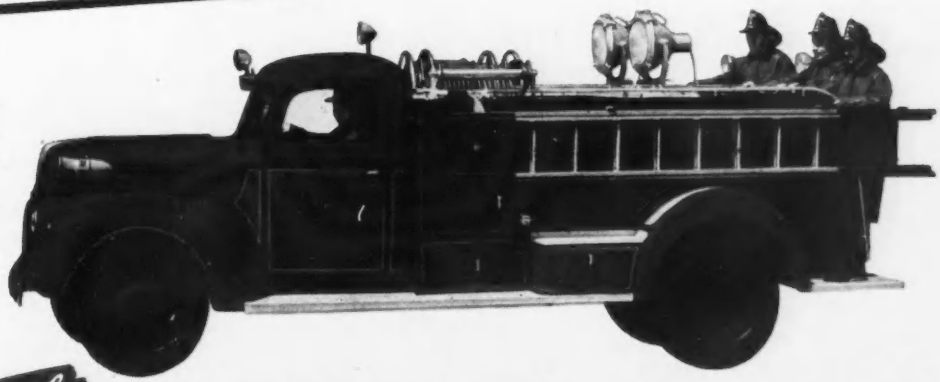
This high pressure gives you a combination of high velocity and finely-atomized fog — just what you need to *cool* and *smother* flame. Every droplet of water is broken up into thousands of tiny particles that can be *"blasted"* into the source of the fire.

One gallon of this finely-atomized fog—properly used—has the fire-quenching possibilities of many times that of low-pressure water.

Investigate! Get the facts about this new and revolutionary fire-fighting technique.

Right now, the Armed Forces are taking most of the production of FMC High-Pressure Fog Fire Fighters. But—you should be ready to modernize the moment civilian needs can be met. Start planning—*now!*

ONLY THE FMC HIGH-PRESSURE FOG FIRE FIGHTER PACKS THE NEEDED PUNCH TO PRODUCE AND MAINTAIN 800 LBS. PUMP PRESSURE — 600 LBS. GUN PRESSURE. INVESTIGATE! THERE'S NOTHING ELSE LIKE IT!



STANDARD FMC FOG FIRE FIGHTER. *A self-contained fire-fighting unit. Carries its own water supply and complete fire-fighting equipment. Provides two guns of 30 gallons each at 600 lbs. nozzle pressure. Tested and proved at hundreds of town, rural and airport fires.*

FMC *Original* HIGH-PRESSURE FOG FIRE FIGHTER

CAN BE MOUNTED ON MOST STANDARD TRUCK CHASSIS

FOOD MACHINERY CORPORATION

JOHN BEAN MFG. CO., 726 HAZEL ST., LANSING 4, MICH. • BEAN-CUTLER DIVISION, 426 JULIAN ST., SAN JOSE, CALIF.

BUILDERS OF BEAN HIGH-PRESSURE PUMPS FOR OVER 60 YEARS

When smoke and gases fill the confined spaces your firefighters must enter in the course of duty, be sure the dependable protection of this standard Apparatus is at hand! Vital oxygen is supplied to the wearer for a full hour's time, even under strenuous exertion and heavy breathing. The M.S.A. One-Hour Oxygen Breathing Apparatus is light in weight, compact, completely reliable—in regular use by modern Departments throughout the country. Write for Bulletin BM-6.

MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS AND MEADE STREETS
PITTSBURGH 8, PA.

N. F. P. A. Volunteer Firemen's Section
MEMBERSHIP REPORT

THE November gain of 19 new companies in the N.F.P.A. Volunteer Firemen's Section definitely brings membership out of the late summer slump. The sudden jump in new member companies, rather than a slow but steady gain, augurs well for a new year of many more departments added to the ranks of the Volunteer Firemen's Section.

At every firemen's convention, at fire schools and fire prevention meetings, wherever firemen convene, members are urged to point out the advantages of belonging to the organization.

The following fire companies are welcomed to the Volunteer Firemen's Section this month:

Altadena Fire Department, Altadena, Cal.
Ashland Firemen's Club, San Leandro, Cal.
Creve Couer Volunteer Fire Department, Creve Couer, Ill.
Chisholm Fire Department, Chisholm, Minn.
Fairmont Fire Department, Fairmont, Minn.
Floodwood Volunteer Fire Department, Floodwood, Minn.
Conrad Fire Department, Conrad, Mont.
Glasgow Fire Department, Glasgow, Mont.
Havre Fire Department, Havre, Mont.
North Jersey Fire Officers Association, Wyckoff, N. J.
Excelsior Hook & Ladder Company, Newark, N. Y.
Plandome Fire Department, Plandome, N. Y.
Somers Volunteer Fire Department, Somers, N. Y.
Buffalo Fire Department, Buffalo, Okla.
Guymon Fire Department, Guymon, Okla.
Glenolden Fire Company No. 1, Glenolden, Penn.
Lancaster County Firemen's Assn., Landisville, Penn.
Neffs Fire Company, Inc., Neffs, Penn.
Tazewell Volunteer Fire Department, Tazewell, Va.

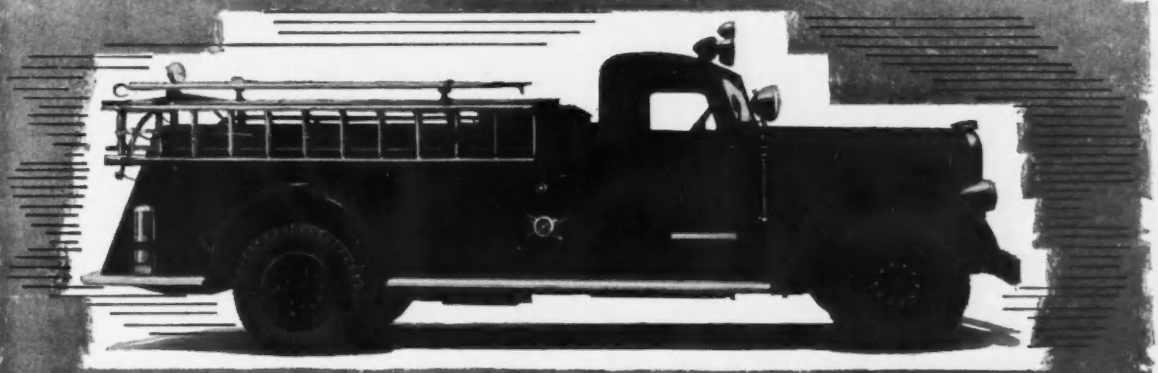
MEMBERSHIP PLAN

- Through the Volunteer Firemen's Section, fire companies may become members of the National Fire Protection Association. As a member fire company, the department receives at headquarters a set of all regular N.F.P.A. publications. This includes the Quarterly, the monthly News Letter, posters and bulletins.
- Each member fire company has the Volunteer Firemen magazine sent to the homes of ten men at no extra charge beyond the ten dollars annual dues paid by all associate members of the N.F.P.A. All other N.F.P.A. members pay ten dollars without the ten copies of Volunteer Firemen.
- If more than ten firemen want to receive Volunteer Firemen, an additional dollar should be sent for each extra fireman listed to receive the magazine. Individual subscriptions are not accepted from departments not members of the N.F.P.A.

AVOID FIRES!
Be careful with matches cigarettes, cigars, etc.
Be sure they are out before you throw them away
Use safety matches or keep matches in metal boxes
Keep them out of reach of small children
Don't smoke in bed
MATCHES

THE June, 1943, VOLUNTEER FIREMEN published a safety poster, issued by the Federal Public Housing Authority, warning against the danger of smoking in bed. This bad habit is responsible for many home fires causing not only property damage but loss of life. This month the Editor prints two more fire prevention posters sent out by the FPHA. They caution against carelessness with smoking materials and the need to maintain heating and electrical equipment in top condition.

NUMBER 10 for WASHINGTON, D.C.



QUICK FACTS

About Ward LaFrance Model 85T, illustrated, as modified for the Washington, D. C. Fire Department:

Overall Length: 292 inches
Weight (empty): 13,675 lbs.
Cylinders: 6
Wheelbase: 182 inches
Turning Radius: 33 ft.
Horsepower: 200
Pump: 750 G. P. M., 2-Stage Centrifugal
Booster Tank: 75 gals.
Hose Capacity: 1000 ft. 2½ in.
Ladders: 20 ft. extension
12 ft. roof

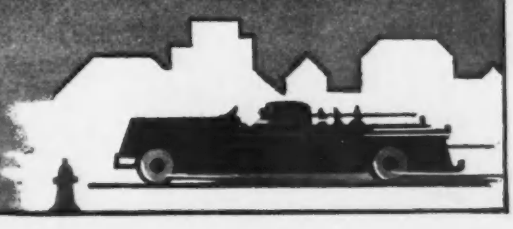
This Triple Combination Pumper recently delivered to Washington, D. C. is the tenth of thirteen 750 G. P. M. and 1000 G. P. M. Ward LaFrance models ordered.

Larger cities such as Washington choose Ward La France equipment on the basis of our ability to meet their engineers' specifications to the letter, and do so with true economy. Smaller communities by the score are also picking Ward LaFrance apparatus. The reason: wide range of basic models, authoritative engineering assistance, plus a reputation for unbeatable stamina and performance.

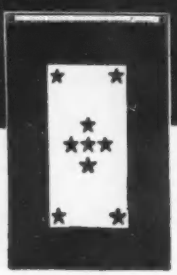
WARD LAFRANCE

TRUCK DIVISION

GREAT AMERICAN INDUSTRIES, INC. - ELMIRA, NEW YORK



HONOR YOUR SERVICE MEN



Honor your fellow-firemen now serving with the armed forces, by displaying this official

SERVICE FLAG

Blue stars, white panel, field of red. Send for catalogue.

One star for each one in service. Available in any size or material desired. Send for Free illustrated catalogue and price list today.

Permanent ROLL of HONOR

A permanent plaque, with individual names in silver on gold-bordered permanent name plates. Beautiful walnut plaque with eagle and victory torches. Write for price list today.

U. S. and Allied Flags in all sizes. Write for prices.

REGALIA MFG. CO.

Dept. 82, Rock Island, Ill.

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MANUFACTURERS' ANNOUNCEMENTS

New Research Organization Formed by Pyrene

A NEW industrial research and development organization, the Pyrene Development Corporation, has been formed as a subsidiary of the Pyrene Manufacturing Company of Newark, N. J., makers of fire extinguishing equipment and automobile tire chains. The new organization will not only carry out research on fire extinguishing equipment and compounds but will also work in the larger field of safety devices and other means for conserving life, health and property, according to Mr. Charles G. Durfee, President of the new corporation. To ensure the continuance of a broad program, ideas from the public will be welcomed. An immediate project is the extension of the development of systems and equipment for employing the mechanical foam principle in fire extinguishment.

●

Colorful Desk Calendars Offered

IF you like pin-up girls (and who doesn't?) you'll like the snappy monthly desk calendars offered by the Young Fire Equipment Corp. of Buffalo, N. Y., manufacturers and distributors of fire apparatus and fire department equipment and accessories. Perhaps you remember the firm under its former name, Cayasler Mfg. Corp. Drop a line to Mr. L. W. Young at 1546 William St., Buffalo 6, N. Y., and he'll send you an eye-filling desk calendar which is cleverly arranged to stand up on a flat surface without support.

●

New York City Fire Dept. Orders Twenty Ward La France Pumpers

TWENTY new pumpers for the New York City Fire Department have been ordered from the Ward La France Truck Division of Great American Industries, Inc., Elmira, N. Y., it was announced today by Harold W. Harwell, president. The pumpers, each of 750 gallons capacity, will be specially designed for use in New York City. They will have open cabs to provide better vision for the drivers and their equipment will include safety nets and mounted deck guns. In addition to the pumpers just ordered, other Ward La France equipment operated by the New York Fire Department includes hose wagons, rescue and floodlight units, as well as pumpers already in use.

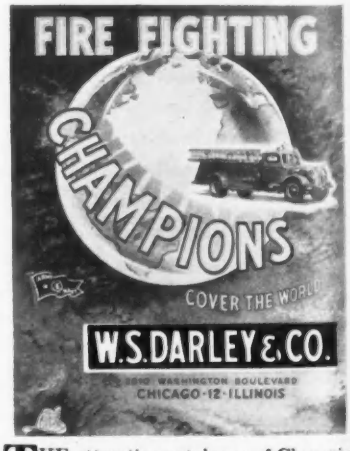
●

Handy Decals for Fire Extinguishers

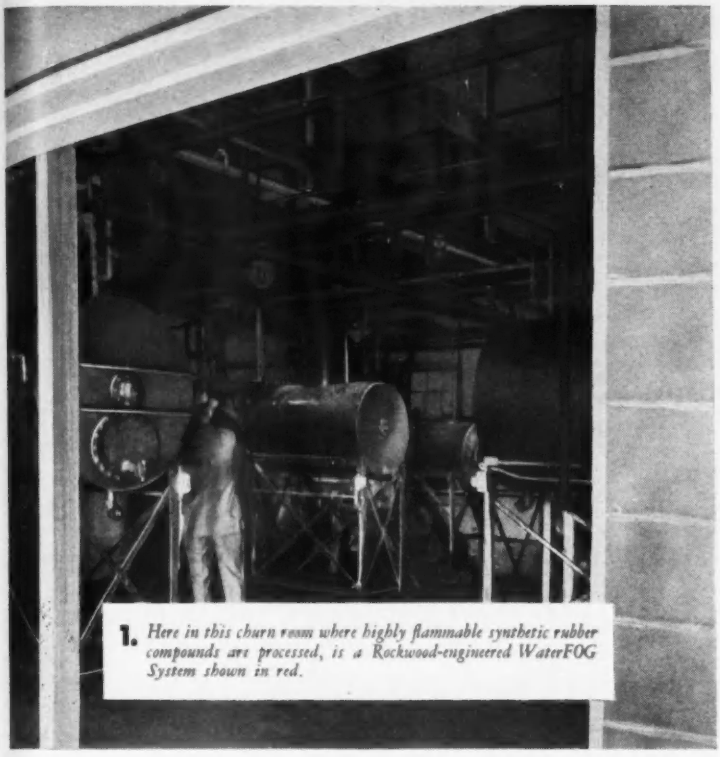
A SET of three decalcomanias for first-aid fire extinguishers has been made up by Walter Kidde & Company, Inc., manufacturers of fire-protection equipment. These decals, which can be transferred to the extinguisher itself or to the wall behind its station, indicate briefly and clearly the fires for which that partinular unit is suitable, and those on which it should not be used. A limited number of sets will be supplied free, and larger quantities may be had for a nominal charge, on request to Walter Kidde & Co., Inc., New York 6, N. Y.

●

Darley Offers Catalogue



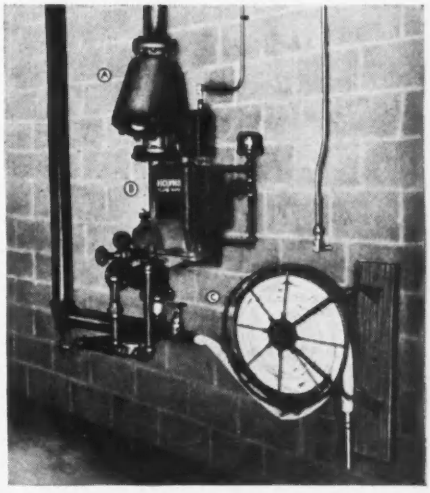
THE attractive catalogue of Champion Fire Apparatus illustrated above is offered, to readers of VOLUNTEER FIREMEN, by W. S. Darley & Company of Chicago. The Darley Company is well known as a manufacturer and distributer of all types of fire department equipment and supplies. They have initiated an advertising program in our magazine after several year's absence from our pages. Their current advertisement is on page 25



1. *Here in this churn room where highly flammable synthetic rubber compounds are processed, is a Rockwood-engineered WaterFOG System shown in red.*

2. *And this shows the Rockwood installation being tested. Notice how cooling, confining, smothering WaterFOG completely fills the room.*

3. *Here is the automatic control valve device which detects a fire and starts the fog. (A) Rockwood Strainwell Unit. (B) 2½ inch Rockwood Deluge Valve. (C) Auxiliary WaterFOG type N-22 nozzle, fire hose and hose reel.*



Why ROCKWOOD WaterFOG SYSTEMS ARE SELECTED FOR CRITICAL WAR PLANTS

By impinging streams of water at a predetermined angle, Rockwood specially-designed equipment produces a most efficient WaterFOG pattern for fighting oil fires. Its myriad of tiny particles covers a broad area . . . ideal for places like the churn room above.

Every gallon of water changed to Rockwood WaterFOG absorbs about 8000 B.T.U's . . . remarkable cooling action for such a small amount of water. Then, as each gallon turns to steam, it occupies at least 230 cubic feet of space . . . choking off oxygen, snuffing out flames.

The most efficient installation of WaterFOG requires the specialized knowledge and background of Rockwood engineers. It is influenced by several important factors: the characteristics of the hazard itself, water supply, etc.

Rockwood-engineered systems in the form of fixed piping installations, approved by Underwriters' Laboratories and Associated Factory Mutuals. Nozzles and applicators for fire hose lines also available—used by Army, Navy, Coast Guard, U. S. Maritime Commission and hundreds of Industrial Plants. Write for Bulletin 123.

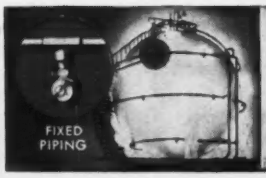
TYPICAL WaterFOG APPLICATIONS ARE:

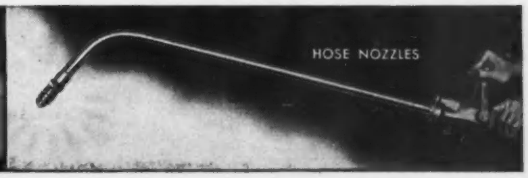
transformers	generators
oil switches	paint shops
control rooms	oil storage, etc.

ROCKWOOD SPRINKLER COMPANY
88 Harlow Street, Worcester 5, Mass.
Specialists in Fire Protection Engineering Equipment and Installation since 1907

Water Engineered by Rockwood Cools, Confines, Smothers Oil Fires

ROCKWOOD WaterFOG





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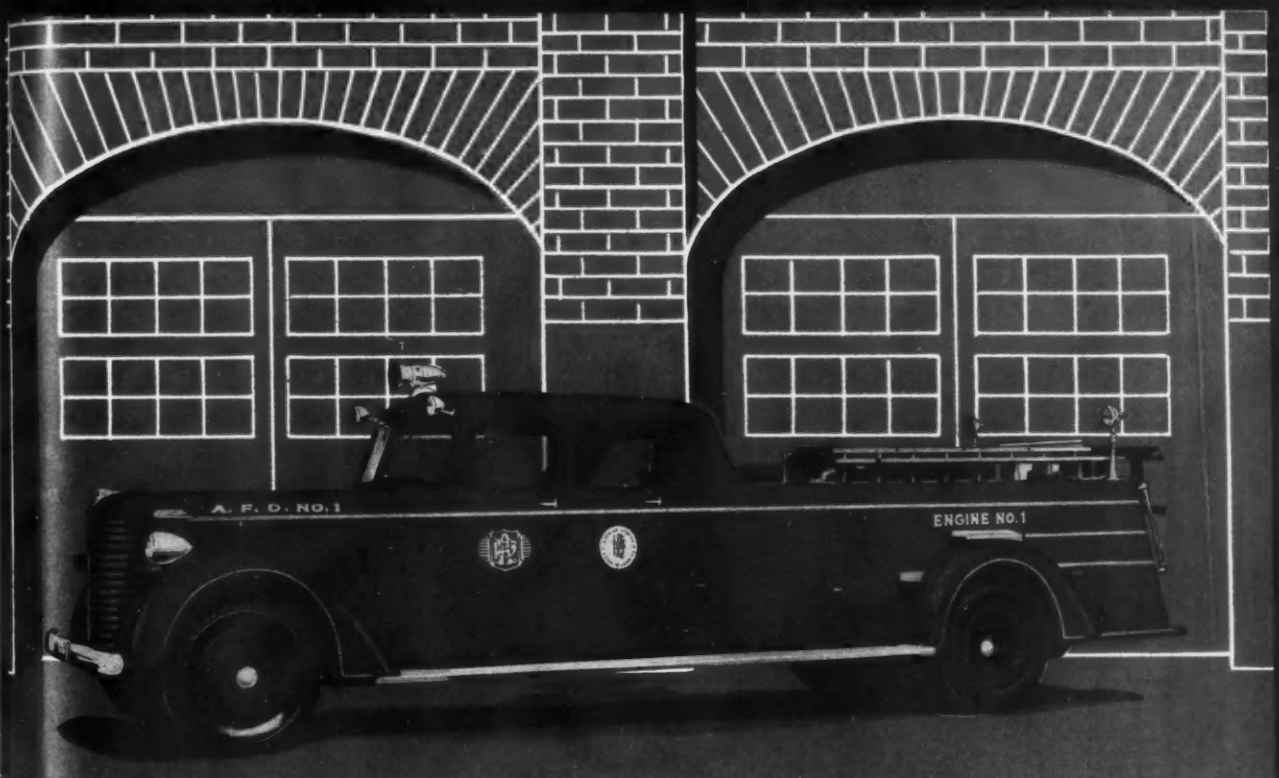

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